Appendix A-1:
NASED Programmatic Master Plan
New Aloha Stadium Entertainment District

PROGRAMMATIC MASTER PLAN

Proud is the name of Ewa
Fertile land where oysters once thrived
Behold the great guardian owl of Hālawa
Casting its gaze upon Aiea
Profuse is the fragrance of the uplands
These lands in the upper reaches of Kalauao
There is the distance is the path of the Makalapua
Traversing Waimalu, Waiau and Waimano
There is the distance is the path of the Makalapua
Traversing Waimalu, Waiau and Waimano
The lilting of the coconut fronds at Manana
Bearing witness to more fertile, verdant lands
Waiawa, Waipi o and Waikele
A myriad of memories of the glorious days old
There is Pōhakupili, the journey is from Hō ae ae
Appease the ancient names of honor, Kāne and Kanaloa the awa drinkers
Trailing out to Kalaeloa upon the lands of Honouliuli
For you we utter your name, Ka ahupāhau benevolent grandmother guardian
For such glorious and magnificent day we shall behold
That brilliant day where we shall wave our beloved flag once more
For beloved Hawai i ever in the shelter of Kamaka eha
Remain steadfast always with love, honor, dignity and respect for this our legacy

Na u no, Hinaleimoana K.K. Wong-Kalu

Originally composed in 1996 for the Hawaiian language community class under Leeward Community College Ka Leo Kaiāulu program where I taught for several years around Oahu. This mele is now finally revived and revised on this 12th day of October 2020. It honors the late Queen Lili‘uokalani, mother of Hawai i and our land and people. We shall never forget, and we shall remain ever dedicated to the pursuit of justice, fairness, liberty and equity for our Kanaka in our homeland of beloved Hawai i.

Hinaleimoana K.K. Wong-Kalu
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Acronyms and Abbreviations

AECOS - AECOS Engineering
ACA - Aiea Community Association
ADA - Americans with Disabilities Act
CCH - City and County of Honolulu
DOE - Department of Education
DPP - Department of Public Planning
EIS - Environmental Impact Statement
EISPN - Environmental Impact Statement Preparation Notice
HAR - Hawaii Administrative Rule
HART - Honolulu Area Rapid Transit
HCDA - Hawaii Community Development Authority
HDOT - Hawaii Department Of Transportation
HHPA - Hawaii Public Housing Authority
HRS - Hawaii Revised Statues
JBPHH - Joint Base Pearl Harbor-Hickam
NASED - New Aloha Stadium Entertainment District
OEQC - Office of Environmental and Quality Control
P3 - Public Private Partnership
PMP - Programmatic Master Plan
TMK - Tax Map Key
TOD - Transit-Oriented Development
Background

PREFACE

Acknowledgments

This Programmatic Master Plan reflects the hard work and dedication of a large group of community members, including elected officials, administrators, public servants, community leaders, business leaders, and members of the public who have been committed to the Hālawa area. The project team is grateful to recognize the following people who contributed to this effort:

1.1

- Senate President Ronald Kouchi
- Senator Glenn Wakai
- Senator Donna Kim
- Senator Donovan Dela Cruz
- Senator Gilbert Keith-Agaran
- The Late Senator Breene Harimoto
- Speaker of the House Scott Saiki
- Representative Sylvia Luke
- Representative Ty Cullen
- Representative Aaron Johanson
- Governor David Ige
- Lt. Governor Josh Green
- Council members
- Community stakeholders
- Chace Shigemasa, Chair, on behalf of Neighborhood Board #18
- Bill Clark, Chair, on behalf of Neighborhood Board #20
- Claire Tamamoto, President, of the Aiea Community Association

Artwork by John Prime
Project Management

Department of Accounting and General Services (DAGS) Staff

Aloha Stadium Authority Board

Aloha Stadium Staff

New Aloha Stadium Entertainment District Consultant Team

Crawford Architects leading multidisciplinary team of consultants including:

- WT Partnership
  - P3 Transaction Advisors / Project Delivery & Cost Estimating

- Architects Hawai'i Limited
  - Local Architects

- Wilson Okamoto
  - Environmental Impact Statement Preparation / Traffic & Site Infrastructure Studies

- Honua Consulting
  - Community Outreach & Cultural Surveys

- Aecos Inc
  - Botanical/Fauna Survey

- Y. Ebisu & Associates
  - Noise Assessment

- Cultural Surveys Hawai'i
  - Archaeology Surveys
  - Cultural Resources

- Control Point
  - Surveying

- Geolabs, Inc
  - Geotechnical Survey

- Victus/RCLCO
  - Market Analysis

- CommPac
  - Public Relations & Community Outreach

Programmatic Master Plan Authorship Team

Crawford Architects
- Master Plan Site Design & Project Management

Honua Consulting
- Community Outreach & Cultural Surveys

Architects Hawai'i Limited
- Master Plan Site Design & Architectural Guidelines

Architects Hawai'i Limited
- Master Plan Site Design & Architectural Guidelines

Artwork by John Prime
Precedent Information

Comprehensive Site Summary - Oct. 2014

All to introduce a proximity-based plan to transform the Hālawa area into a fully integrated mixed-use community.

By creating a diverse and compact environment, the community is able to take full advantage of the benefits this transit connection presents - creating new economic growth opportunities through new development encompassing retail, commercial, housing, and visitor amenities. This creates a framework for growth and a guide for the full realization of the delivery model.

The construction of the new stadium facility and related mixed-use development in the Hālawa District on the grounds of the existing Aloha Stadium is intended to be delivered through a number of construction phases and is intended to deliver a world class and community-centric mixed-use district, with an emphasis on developing diverse sustainable programs, revenue streams, and amenity opportunities.

The 2019 Victus / RCLCO Market Feasibility Studies & Economic Impact Analysis provided the comprehensive list of over 150 stadium vendors, users, licensees, and neighboring businesses were invited to engage with the project team in a larger community workshop. This workshop, led by Crawford Architects, allowed key stakeholders to provide input and assessment of the conceptual options available. The documentation of this input will be continuously used to guide major design decisions throughout the development of NASED. More detailed information about these meetings and their outcomes can be found in the sub-section labeled 'Public Design Process.'

The Aloha Stadium Conceptual Redevelopment Report

Prepared by Foley and Lardner LLP: Victor Afanasiev, Popovskiy, and Joon Kim Saigal

This report poses an initial market study and economic impact analysis for mixed-use development options, followed by recommendations based on the legal and practical risks, challenges, and opportunities associated with proposed planning efforts.

The New Aloha Stadium Entertainment District (NASED) is intended to create an exciting, vibrant mixed-use community situated on the Aloha Stadium parcel within the Hālawa Area Transit-Oriented Development boundaries. This District is intended to create a world class and community-centric mixed-use development project to create economic growth opportunities through new development encompassing retail, commercial, housing, and visitor amenities. This creates a framework for growth and a guide for the full realization of the delivery model.

The Aloha Stadium Conceptual Redevelopment Report

Prepared by Foley and Lardner LLP

The report was compiled and authored the results of the comprehensive study undertaken by the District Developer(s) to consider. Each option envisioned the new stadium in a different location within the District. These three options were additionally shared with the Community Advisory Board and stakeholders to obtain input and express their needs and concerns.

Executive Summary

The Aloha Stadium Conceptual Redevelopment District (HART) of the Hālawa Area TOD project was initiated by the Hawaii State Department of Accounting and General Services (DAGS) to study and evaluate opportunities for repurposing the Old Aloha Stadium to support the new stadium and mixed-use development that will serve to create revenue streams, immediate recommendations, expense projections, government funds, planning, and decision-making.

The Aloha Stadium Conceptual Redevelopment District Project TOSP

Prepared by Foley and Lardner LLP

The Full report is intended to add input and express their needs and concerns. This report was compiled and authored the results of the comprehensive study undertaken by the District Developer(s) to consider. Each option envisioned the new stadium in a different location within the District. These three options were additionally shared with the Community Advisory Board and stakeholders to obtain input and express their needs and concerns.

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A new bill anticipated to be introduced in the upcoming 2021 legislative session proposes to amend the roles of the relevant State parties, effectively transferring development responsibility and powers from the HCDA to the Stadium Authority.

Act 268, SLH 2019, signed into law on July 8, 2019, appropriated total funds of $350 million—comprised of a mix of funds—to improve the array of fan amenities and support spaces to market new events, including additional luxurious seating options, more extensive concessions, and improved facility circulation.

Public housing project is part of the Hālawa TOD, the public housing project will be managed distinctly and separately from the NASED development by the Hawai'i Public Housing Authority (HPHA).

The NASED PMP is intended to synthesize the findings and recommendations found within and build upon the TOD Plan, technical studies of the NASED area, and develop design standards and technical requirements for the stadium facility and development.

The vision for the NASED builds upon the extensive work thus far undertaken by the Hawai‘i State Legislature, the Department of Accounting and General Services, the Department of Land and Natural Resources, and the Planning and Development Division of the State. The vision is to synthesize the findings and recommendations found within and build upon the TOD Plan, technical studies of the NASED area, and develop design standards and technical requirements for the stadium facility and development.

The stadium will be downsized from its existing capacity of 50,000 seats to an anticipated capacity range of approximately 27,500 - 35,000 seats, based on the determination of the developer lead design teams in 2021.

In response to the findings of the February 2017 Aloha Stadium Conceptual Redevelopment Report, the Proposed Action for NASED encompasses the construction of a new stadium facility in addition to related mixed-use development that will serve to create a New Aloha Stadium Entertainment District on the grounds of the existing Aloha Stadium site in Hālawa.

The stadium facility has been in dire need of significant repair and maintenance for many years. The Stadium Authority has considered repairing, upgrading, and replacing the existing facility to optimize the facility. A widened pedestrian pathway, flanked by ground-level retail and visitor amenities, directly connects the HART Station to a multi-functional entertainment plaza which fronts the stadium. The site maintains ample space dedicated for stadium parking as a large semi-circular lot.

Establishment of the New Aloha Stadium Entertainment District

The State of Hawai‘i, through its agencies, DAGS and the Aloha Stadium Authority (collective, “the State”) intends to procure planning and due diligence for the NASED project area.

This NASED PMP is intended to synthesize the findings and recommendations found within and build upon the TOD Plan, technical studies of the NASED area, and develop design standards and technical requirements for the stadium facility and development.

The establishment of the New Aloha Stadium Entertainment District will result in the collection of the Regional System, in compliance with HRS Chapter 343. The regional system description and planning of the associated project requirements are currently being finalized.

Under the provisions of Act 172, SLH 2012, DAGS has demonstrated that a need exists to protect the Hals Avenue area from the time critical and time sensitive nature of escalating construction costs and mounting deferred maintenance expenses tied to the continued operation of the existing stadium facility.

The legal document that is to be documented and filed with the Department of Accounting and General Services is an environmental impact statement. The stadium facility has been in need of significant repair and maintenance for many years. The Planning and Development Division of the State is to be documented and filed with the Department of Accounting and General Services.

In July 2019, Governor David Ige executed Act 268 to revitalize the Aloha Stadium area and provide funding assistance for the construction of a new stadium. Act 268 states: “The legislature finds that the Aloha Stadium and lands under the jurisdiction of the Stadium Authority and the Department of Accounting and General Services are underutilized. The stadium facility has been in need of significant repair and maintenance for many years. The Planning and Development Division of the State has been in need of significant repair and maintenance for many years. The Planning and Development Division of the State has been in need of significant repair and maintenance for many years.”

If the stadium facility has been in need of significant repair and maintenance for many years, the Planning and Development Division of the State has been in need of significant repair and maintenance for many years. The Planning and Development Division of the State has been in need of significant repair and maintenance for many years.

Selection of Conceptual Design

Based upon the site development concepts outlined in the Draft December 16, 2020, the State of Hawai‘i, through its agencies, DAGS and the Aloha Stadium Authority, has identified four key concepts for further refinement: each concept will be programmatically mapped to the larger development context. Each concept considers how a given program fits into the site development context, as well as the time frame of the Master Plan.

The selected concept will be subject to further refinement and analysis as the Master Plan progresses. The Master Plan will be subject to further refinement and analysis as the Master Plan progresses. The Master Plan will be subject to further refinement and analysis as the Master Plan progresses. The Master Plan will be subject to further refinement and analysis as the Master Plan progresses. The Master Plan will be subject to further refinement and analysis as the Master Plan progresses.

Program Description

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Option B

This option creates the shortest distance between the HART Station and the Stadium to maximize TOD development and event day access while preserving more of the site for future development. Of the three concepts, this option assumes the highest development densities and provides additional land and parking for the stadium. The pedestrian promenade, or the “Paniolo Boulevard,” is one of the signature features of this option. This greenway follows the existing site perimeter and becomes an important amenity corridor, connecting the stadium and station, with cultural amenities and outdoor recreational uses along the perimeter of the pedestrian corridor between the station and stadium.

Option C

This concept creates the longest distance between the HART Station and the Stadium, allocating the most area for a pedestrian retail experience between the two. This option would require the development of a mixed-use district, which could include the new sports and entertainment arena. This design provides a large, multi-functional ‘central park and town square’ as the core of the mixed-use area.

Option C

Option C, the 크게 더 자세한 내용은 아래의 링크를 참고하시기 바랍니다. https://www.alohastadium.com/masterplan
Programmatic Environmental Impact Statement

The NASED Program was developed to expedite the Programmatic EIS in accordance with the ALA requirements. The Programmatic EIS provides for a tiered approach to evaluate the potential environmental impacts of the proposed development. This approach allows for a more efficient and comprehensive review of the potential environmental impacts. The Programmatic EIS identifies a range of potential development scenarios and discloses the impacts of the proposed maximum scale of potential development. This EIS, when project-level issues are determined, may need to be followed by subsequent project-level environmental review documents which may take the form of Supplemental EIS, Environmental Assessments, EA Exemptions, etc.

The District is located approximately 0.25 miles from the nearest shoreline of Pearl Harbor's East Loch, and 0.7 miles to the northeast of The Pearl Harbor Visitor Center and Historic Sites complex. There are major visitor attractions in Pearl Harbor such as: the USS Arizona Memorial, Ford Island, USS Missouri Memorial Park, and an adjacent parking area to the southeast generally bounded by Kamehameha Highway on the west, Moanalua Freeway on the north, legs of Salt Lake Boulevard on the northeast, southeast and southwest sides. TMK: [1] 9-9-003:071 will contain the future Hālawa/Aloha Stadium Transit Station.

Description of NASED

NASED is the developed real property owned and includes the expanse of the former State of Hawaii public savings and loan association complex property and includes adjacent undeveloped land. The State of Hawaii and the City and County of Honolulu have agreed to an exchange of the property. The NASED Program includes the following:

- The "New Hālawa Development," comprising the construction of a new stadium, parking facilities, and supporting infrastructure such as roads, utility improvements, and requisite utility improvements.
- The "Mixed-Use Development," comprising development which may include commercial, residential, educational institutions, office space and local and regional retail facilities, multi-family residential units, and other community facilities.
- The "Residential Development," comprising the construction of a residential development to be developed in phases.
- The "Neighborhood Scale Entertainment District," which includes the only permanent public ice skating rink in Hawaii at Ice Palace Hawai'i. Further to the southeast are the residential communities of Foster Village, Āliamanu and Salt Lake. Within these communities, there is a mixture of single and multi-family residential developments as well as several commercial activity centers. These centers house a variety of small retail, food, restaurant, and entertainment options as well as health care facilities and services.

The NASED Program includes two key components:

1. Construction of a new stadium
2. Development of a Mixed-Use District

The NASED Program will consist of three phases, the initial tranche being the construction of the New Hālawa Development. The subsequent phases will include the Mixed-Use Development and the Residential Development. The initial tranche of Mixed-Use Development, also known as the Hālawa District, includes the stadium facility, which seats approximately 50,000 people and the surrounding parking areas with approximately 7,476 stalls. The parking area around the Aloha Stadium radiates in circular rings from it, while additional parking extends southward, via three bridges, across Hālawa Stream. The parking lot is the site for several events including the Swap Meet, the 50th State Fair, car shows, and auto/motorcycle racing.

The "Remaining Development," comprising additional real property owned, is envisioned to include retail, residential, commercial, hotels, hospitality and cultural and community facilities and supporting infrastructure such as roads and bridges across Hālawa Stream.

The District is located approximately 0.25 miles from the nearest shoreline of Pearl Harbor's East Loch, and 0.7 miles to the northeast of The Pearl Harbor Visitor Center and Historic Sites complex. There are major visitor attractions in Pearl Harbor such as: the USS Arizona Memorial, Ford Island, USS Missouri Memorial Park, and an adjacent parking area to the southeast generally bounded by Kamehameha Highway on the west, Moanalua Freeway on the north, legs of Salt Lake Boulevard on the northeast, southeast and southwest sides. TMK: [1] 9-9-003:071 will contain the future Hālawa/Aloha Stadium Transit Station.

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the residential subdivision known as Kā'anapali. The area is served by the Kā'anapali Transit Center, a small park and ride lot with an electric vehicle charging station, and is within walking distance of the shopping center. Kā'anapali is also home to the Kā'anapali Beach Resort, a popular tourist destination featuring several hotels and golf courses.

Southwest of Hālawa Heights, in the town of Kā'īawa, is the residential subdivision of Kā'īawa Heights. This area is served by Kā'īawa Road, which connects to Kamehameha Highway. Kā'īawa Heights is known for its rural charm and small community feel.

To the west of Hālawa Heights, in the town of Waimanalo, is the residential subdivision of Waimanalo Heights. This area is served by Waimanalo Boulevard, which connects to Kalaniana'ole Highway. Waimanalo Heights is known for its proximity to the ocean and its tropical foliage.

In summary, the surrounding areas of the District provide a range of residential, commercial, and recreational options, with easy access to transportation and services.
ROLE OF THE PROGRAMMATIC MASTER PLAN

Purpose and Need
The Programmatic Master Plan sets forth a vision and guidelines for the selected District Developer(s). It is an aggregated reflection of community input, principles of TOD and comprehensive planning, and an aggregated collection of extensive input from area residents, members of the public, existing stakeholders and the community in the community meetings and workshops. The cornerstone of the NASED development is the New Aloha Stadium. As identified in the NASED EIS/NEPA, three optional stadium programs are examined. Of those three options, Option B in which the new stadium is built to the west of the existing facility was selected for further examination.

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- New and varied entertainment talent will be developed over several years. To define this expected ongoing development, the PMP considers indicative ‘phases’ in which the project may occur in a different manner. Therefore, the assumptions made herein regarding phasing are indicative. From a nomenclature perspective, the following applies for reading alongside the EIS and various reports appended to the EIS:
  - Phase 1 refers to the initial tranche of Mixed-Use Development
  - Phase 2 refers to the secondary tranche of Mixed-Use Development
  - Phase 3 refers to the final tranche of Mixed-Use Development
- Proposed Site Program

The 2019 Victus report outlines the programmatic quantities which have been identified as providing a mix of economically sustainable development. It should be noted that the Mixed-Used Development program as outlined in the PMP document is meant to provide a multitude of site uses outside of the immediate relationship with the New Aloha Stadium. The financial success of a New Aloha Stadium depends on the mix of ancillary development to provide a continuous mix of revenue-generating activities. This relationship with the New Aloha Stadium and the site of the proposed development will provide opportunities for non-CFL related economic development throughout the project phases. The site of the proposed development will provide an assured array of regional and local tourism opportunities for locals as well as tourists.

Proposed Site Program

The proposed program of the Mixed-Used Development, including the initial tranche (indicated as “Phase 1”) and the full build out, is indicated on the table on the previous page. The residential component of the NASED program is broken into three varying socioeconomic ‘tiers’, with the idea that all price-points of housing will be evenly distributed throughout NASED. Preference should be provided for ‘full build-out’ since future development will be determined by what the market allows.

How to Understand and Interpret the PMP

The Programmatic Master Plan (PMP) is intended to serve as a point of guidance and process overview for future development of design concepts. Based on the analysis of project metrics as elaborated upon by this document, any future development plans that do not work within the metrics as outlined in the PMP document will not be considered. This includes the PMP as a tool for guiding strategic decisions, as well as for setting parameters for future development. The Programmatic Master Plan sets forth a vision and guidelines for the selected District Developer(s). It is an aggregated collection of extensive input from area residents, members of the public, existing stakeholders and the community in the community meetings and workshops.

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Public outreach and consultation are important components of any master planning process. Therefore, it is crucial from the outset of the project to engage with and gain input from the public and key stakeholders. Therefore, it was critical from the outset of this project to initiate early and open discussion with interested persons and agencies concerning the development of the Programmatic Master Plan.

This section of the Plan details the public outreach and consultation for Programmatic Master Plan District.

Building on the TOD Planning Process

It should be noted that this process built upon the extensive work completed by the City and County of Honolulu and community during the Hālawa TOD planning process, which was carefully reviewed and considered throughout the entirety of this project. This community engagement effort is in many critical ways a continuation of the TOD Plan’s outreach and community engagement work and looked to build upon the many important successes of that planning process.

Expectations for the District Developer(s)

It is also expected that the District Developer(s) will pay equal careful consideration to the TOD planning process and the process undertaken for this Master Plan and:

1) Embrace the input provided by the community and stakeholders in the continued planning and development of the District;
2) Develop their own relationships with the community and stakeholders that will inform and enhance their planning and design work;
3) Continue to regularly engage with community and stakeholders throughout the planning, design, and construction processes through additional workshops and ongoing attendance at community meetings and events.

Planning Timeline

-$\text{Stakeholder Interviews}$
-$\text{Project Advisory Committee (PAC)}$
-$\text{PAC Meeting 2}$
-$\text{Meeting 1}$
-$\text{Community Workshop 1}$
-$\text{Community Workshop 2}$
-$\text{Infrastructure Meeting}$
-$\text{PAC Meeting 3}$
-$\text{Site Analysis Workbook Meeting}$
-$\text{Neighborhood Board Meeting (Ongoing)}$
-$\text{Stakeholder Meeting}$
-$\text{PEIS Scoping Meeting}$
-$\text{Swap Vendor's Meeting}$
-$\text{Community Needs Survey}$
-$\text{Existing Conditions Report}$
-$\text{Alternatives Report}$
-$\text{Draft TOD Report}$
-$\text{Site Concepts A, B, and C}$
-$\text{EIS/PEIS Issued}$
-$\text{Draft TOD Report}$
-$\text{Final TOD Report}$

-$\text{HĀLAWA AREA TOD PLANNING PROCESS}$
-$\text{NASED PROGRAMMATIC MASTER PLANNING PROCESS}$
-$\text{Community Workshop 3}$
-$\text{Site Confirmation Report}$
-$\text{Project Unveiling at CSEF Conference}$
-$\text{Act 268 Signed into Law}$
-$\text{The Stadium Development District is established}$
-$\text{P3 Industry Day}$
-$\text{SMPS Presentation}$
-$\text{Client Presentation}$
-$\text{Issue Draft EIS and Master Plan}$
-$\text{Issue RFP to Developers}$
-$\text{Issue Final EIS and Master Plan}$
-$\text{RFQ Issued}$

-$\text{P3 DEVELOPER MASTER PLANNING PROCESS}$
-$\text{ONGOING COMMUNITY ENGAGEMENT DURING CONSTRUCTION}$
Public Design Process

Community Design Workshops

The project team held neighborhood design workshops for the NASED project in December 2019 and January 2020. Crawford Architects and Honua Consulting led two community design workshops to solicit valuable input from the community and enhance transparency by giving stakeholders an opportunity to inform the design of the NASED early in the Programmatic Master Plan process.

The primary purpose of the two workshops was to:
- Provide valuable input to the Master Plan and design of the NASED;
- Encourage small, local vendors and shops;
- Include a museum or other cultural interpretation;
- Improve traffic flow in and out of site;
- Create rideshare zones to make it easier for rideshare customers to access property;
- Having adequate parking for residential units;
- Make the site bike friendly;
- Adding 20,000 affordable units;
- Improving noise projection and its impact on surrounding residential areas;
- Improving tailgating and other activities;
- Addressing the need to reduce congestion in surrounding areas for people and park off-site at neighboring areas where gathering spaces, kiosks, and gathering back areas are provided;
- Implementing sidewalks for easy accessibility, safety, and social interaction;
- Creating multi-use paths and trails for bicycles, pedestrians, and vehicles;
- Improving connectivity to other features on site;

The workshop site location was set up at the Aiea Holiday Family Fair held on Saturday, December 14, 2019. During this event, the project team distributed information about the project to the public, provided flyers about the upcoming workshop, and set up an informational booth at the fair.

Weekly meetings were held at the following locations:

- Neighborhood Board No. 18 (Āliamanu – Salt Lake)
- Neighborhood Board No. 20 (‘Aiea)
- ‘Aiea Community Association Meeting

Weekly meetings were held to maintain a strong working relationship with area stakeholders and to keep the community informed as to project process and events. The topics discussed at these meetings included:

- Scoping Report
- Minutes for all meetings attended by members of the project team
- Development
- Design
- Budget
- Policies
- Community participation

Outcomes of the Public Master Planning Community Workshop

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Note: Each table will be a 5’ round with 8-10 seats. Facilitators, scribes, and researchers are to stand if needed.

Figure 13. Room layout for Community Design Workshops

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Sub-Topic 4: Environmental and Sustainability,

Outcomes of the Master Planning Stakeholders Workshop

There were approximately 50 participants in the Master Planning Community Workshop. The public was invited to participate in the workshop through a series of notices that included notifications to the area neighborhood boards, participation in the Aloha Stadium Hospitality Room, and public engagement during the workshop.

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Sub-Topic 1: Traffic, Roads, Parking

Sub-Topic 2: Site Program and Amenities, Recreation, Culture

Sub-Topic 3: Stadium Design and Events

Sub-Topic 4: Environmental and Sustainability,
This section was created as a result of multiple conversations and key input from the Honolulu Department of Planning & Permitting (DPP). The input from DPP is important to ensure the NASED PMP complies with the essence of the Hālawa Area TOD Plan. The DPP input has centered on the fact that the NASED PMP (and the Hālawa Area TOD Plan) are programmatic in nature, and the final design decisions and approvals will ultimately be the responsibility of the developer-lead design teams.

Over the course of the process of creating the NASED PMP, the DPP representatives consulted with the team to keep the City appraised and ensure that the intent of the Hālawa Area TOD Plan was being implemented. The team met with DPP and gave a presentation which was transmitted to the DPP.

The feedback from DPP is broken into key categories and will be addressed over the following pages:

- Height Limits
- Massing Density
- Land Use
- Salt Lake Blvd. Treatment
- Building Orientation
- Connections to Adjacent Neighborhoods
- Community Benefits

The key takeaway from DPP’s input to the NASED conceptual master plan is that no “deal killers” were foreseen. All specific planning details will be thoroughly vetted by future design teams, but the NASED PMP (with some adjustments which are documented below) does not generally have conflicts with the Hālawa TOD Plan. Any substantial manipulations to the plan would merit additional discussion. The goal from the conception of the NASED development has been for the development to fit within the umbrella of the Hālawa Area TOD Plan principles. The feedback DPP has provided is passed on to both developers and the community through this document.

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Massing Density

The key massing difference between the NASED PMP and Hālawa Area TOD Plan has to do with total programmatic build-out and where the massing is placed on the site. The NASED PMP proposes a higher degree of development on the mauka side of the stadium site while the Hālawa TOD Plan proposes more development concentrated around the new Aloha Stadium HART Station. The essence of the two plans are in agreement, because both recognize that the highest amount (and most likely first phases) of development will occur adjacent to the new HART station. Due to that agreement and likelihood that the first phases of the NASED development will be built closest to the HART station, future changes to the height map within the Hālawa TOD Plan could be discussed once the market proves itself after the initial success of the NASED.
Land Use

Land use is an important topic to settle due to specific zoning requirements depending on the program within the NASED site. Specifically, the topic of a hotel was discussed within the proposed BMX-3 zoning from the Hālawa Area TOD Plan. The BMX-3 zoning only allows limited-service hotels rather than full-service hotels such as those at Waikiki. A limited-service hotel would also be required to keep commercial development (such as restaurants and shops) separate from the hotel building. While the potential specific hotel tenants have not been identified, DPP indicated that there are other possible methods for including full-service hotels within the TOD Special District area.

DPP indicated that there has been concern for full-service hotels to alter the TOD area, which is an option in another full-service hotel in being included within the TOD Plan. DPP indicated that there has been interest in full-service hotels in other TOD areas, so there is an option to introduce full-service hotels as being included within the TOD Plan as well.

Salt Lake Blvd. Features

The NASED PMP treats Salt Lake Boulevard differently than what is indicated in the Hālawa Area TOD Plan. In the NASED PMP, the allowed height of buildings on the mauka side of Salt Lake Boulevard was reduced, and efforts were taken to reduce the amount of active development occurring along the boulevard due to the across-the-street residential neighbors. The Hālawa Area TOD Plan takes a different approach by promoting commercial mixed-use activity (street-level retail) along Salt Lake Boulevard to provide amenities for the substantial existing pedestrian traffic that uses the boulevard daily.

While the NASED PMP and Hālawa Area TOD Plan are ‘programmatic’ in nature, the city has clearly indicated their desire to have a higher degree of activation along Salt Lake Boulevard. The specific discussions will happen early in the process of the development schemes.
Building Orientation

The parcel of NASED adjacent to the new Aloha Stadium HART Station is recognized in both the TOD Plan and NASED PMP as being the area of highest density for the development. With high density and increased building height comes the need for careful planning regarding the orientation and views of the buildings. Sensitive areas, such as Joint Base Pearl Harbor Hickham across Kamehameha Hwy, need to be considered when tall buildings are constructed. Viewsheds to and from neighboring areas, as well as the user experience as visitors pass through the site, is all being considered.

The Hālawa TOD Plan seeks to reduce the ‘canyon effect’ which is created when tall buildings are built close together, giving users the experience of being at the bottom of a tall canyon. The NASED PMP seeks to create an example of a viable design for mixed-use construction while assisting with wayfinding relating to the overall development. While the amount and distribution of eventual density on the HART service area is still to be determined, developer design teams should carefully consider creating a canyon-effect on the parcel.

Additionally, the Hālawa Area TOD Plan seeks to create a more engaging and welcoming environment with pedestrian-friendly connections, gathering places, and open public spaces. ADA accessible design is a key focus, and will be the responsibility of developer design teams for NASED with unique placemaking elements.

Connections to Adjacent Neighborhoods

There are several gaps of difference between the NASED PMP and the Hālawa Area TOD Plan in relation to pedestrian-friendly connections with adjacent neighborhoods. The TOD Plan includes additional areas which are not included in the NASED PMP (Aiea Elementary School, Pu’uwai Momi, Stadium Marketplace, and Stadium Mall), so while the PMP may not show full pedestrian connections into those areas it does not mean that should not be the intention of priority-listed design teams. Successful future construction phases of NASED will rely on each other in time so while the TOD Plan may show pedestrian connections to the football stadium, developers in the future phases of construction should avoid creating a canyon-effect on the parcel. Additionally, the master plan for the district should serve to enhance the pedestrian aspirations of the Hālawa Area TOD Plan.
Community Benefits

Community benefits discussions with DPP will delve into the specifics of allowable increases in building height. Discussions between the NASED team and DPP will focus on the development plan and the potential community benefits that could unlock the full building height and density potential of the development. The discussions will be focused on the viability of the proposed community benefits against affordable housing, building height, or alternative uses. The developer design team will need to ensure that the community benefits provided throughout the development are consistent with the development plan.

The amphitheater introduces a type of community benefit which is atypical for achieving height bonuses, by providing what may be referred to as "green benefits." Due to this, discussions between DPP and future design teams may investigate the idea of "banking" community benefits for later use. If the amphitheater were to upgrade the site with additional green spaces, it could provide additional benefits that unlock the potential for higher building heights.

Additional community benefits include:

- Recreational areas including parks and open spaces which could include an amphitheater as well as bike and pedestrian pathways
- Educational areas
- Cultural centers
- Community center
- Multi-modal improvements and streetscape enhancements
- Infrastructure upgrades
- Accessible large scale events such as fairs and festivals

CULTURAL AND COMMUNITY HISTORY

In an effort to enhance connectivity between the communities surrounding Hālawa, this Plan reimagines the limitations, barriers, and challenges of existing design standards. The project involves coordination with four neighborhood boards, including Neighborhood Board No. 18 (Salt Lake / Āliamanu / Foster Village) and Neighborhood Board No. 20 (Hālawa). During the project's regular attendance at these board meetings, it was emphasized that planning, design, and construction of the new Aloha Stadium and NASED generally need to take into consideration the needs of these communities.

The project has an incredible opportunity to be a physical manifestation of the gatherings of these histories and cultures. Through its development, connectivity, and intersections, the District can serve as a meeting place, a learning hub, and an opportunity to celebrate our extraordinary histories while charting a course for a sustainable and prosperous future.

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Traditional (Pre-Contact) History

Later in his series of articles, Ī ī (1959) described the system of commoners using ro/tted fish as kūpalu manō are further described in several historical narratives. Ke Awalau o Pu'uloa are famed in traditional and historical accounts of manō. The traditions center around the several deified sharks, foremost of whom is Komoawa, Ka'ehuikimanōopu'uloa, Keli'ikau-o-Ka'ū (Kealiikauaoka'ū) and Mikololou. With the exception of Mikololou, all these shark gods were friendly to the Pu'uloa-'Ewa waters and protecting people. Traditions of Ke Awalau o Pu'uloa tell us that one of the most important kānāwai (laws) governing manō was that by the shark gods themselves. Kamakau (1870) wrote of 'Ilima flowers which belonged to Ka'ahupahau that brought over from Kaua'i with them. The two craters that were left by the shark gods' battles are at these landings spots that they left the bird and salt they paid the penalty of the law because it was her fault—her sister Ka'ahupahau broke the law and devoured the whale. The trouble arose over a papahi lei made by Kāne and Kanaloa. Also, a famous cave on the coastal point, and resting place of the demigod, Kamapua'a. The cave was later used by fishermen as a shelter. Cited in the traditions of Kamapua'a and Ka Loea Histories of this area, which tell of the extraordinary lives and works of akua (gods) and ali'i (chiefs).

Shark Houses

Sharks have numerous origins in the ocean, one of which is the Hawaiian islands. There are different stories of how manō (sharks) transform into manō kānaka (sharks with human affiliations) and take on human characteristics. These stories often reflect the deep cultural and spiritual connections Hawaiians have with their environment. The traditions of Ke Awalau o Pu'uloa describe how the shark gods fought battles that resulted in the creation of two craters where the shark gods left the bird and salt. These craters are said to be the result of the laws that the shark gods themselves set to govern manō. One tradition tells of 'Ilima flowers, which were brought from Kaua'i by the shark gods, that were left behind at these landings spots. The trouble arose over a papahi lei, a type of lei that signifies the taking of life, which was made by Kāne and Kanaloa.

Shark Houses are thought to be the resting places of shark gods during their journeys and adventures throughout the islands. They are often located along the Hālawa coastal flats and are considered sacred places for both living and deceased family members. The shark gods are believed to reside in these houses and are said to guide and protect Hawaiians. For example, the Shark House at Makalapa is a marshy area on the Hālawa coastal flats where the shark gods are said to reside. This area is important for its cultural and spiritual significance, as it is believed to be a place of healing and connection with the ocean.

O‘ahu was made a kapu land by this kanawai placed by the shark gods themselves. Kamakau (1870) wrote of how the shark gods placed laws upon the land to ensure the proper treatment of the dead. These laws were designed to prevent any harm coming to the souls of the deceased, especially if they were not treated properly. For example, the law that punished those who devoured the whale was a result of the shark gods’ intervention to ensure that the whale’s soul was treated with respect.

Significant Sites

Located in the Pu'uloa region is the trail traveled by Ka'ahupāhau, a goddess who was the sister of Pele. This trail is part of the Kumulipo, a Hawaiian creation myth that tells the story of the island's formation. The trail begins at Kikelau and ends at Makapu'u, and is marked by two craters that were created by the shark gods' battles. These craters are believed to be the resting places of the shark gods and are considered sacred sites for Hawaiians. The trail is also significant for its historical and cultural importance, as it is a place where Hawaiians have gathered for generations to honor their ancestors and connect with their cultural heritage.

The trail begins at Kikelau, a small beach located near the mouth of the Hālawa Stream. From here, the trail travels through a marshy area known as Kikihale, up to Leleo, to Koiuiu and on to Keoneula. These areas are important for their cultural and spiritual significance, as they are believed to be the places where the shark gods rested and prepared for their journeys. The trail is also marked by other significant sites, such as the famous cave at Makapua'a, which is a resting place for the demigod, Kamapua'a. This cave is believed to be the place where the shark gods rested during their journeys and adventures throughout the islands.

The trail is an important part of Hawaiian culture and heritage, and is a place where Hawaiians come to connect with their cultural traditions and spiritual beliefs. It is also a place where Hawaiians come to remember their ancestors and honor their contributions to the island's culture and history.

Inland fishpond located off Hālawa Stream within the District.

In 1870, Kamakau wrote about several practices and beliefs pertaining to manō (sharks) in ancient life. One practice of transforming deceased family members into manō as 'aumakua (family gods/guardians). These family 'aumakua would help its relatives when in danger on the sea—if a canoe capsized, the shark gods would come to its aid. Kamakau also noted that manō were known to bite people in Oahu waters and are feared by Hawaiians. The traditions of manō (sharks) are important for understanding the cultural and spiritual connections Hawaiians have with the ocean and their environment.
Post-Contact Cultural History

In traditional times, ala hele and ala loa (trails and major thoroughfares) were accessible from the coastal areas to the interior. A network of trails and major thoroughfares connected the various villages and towns. These trails were used for transport, communication, and trade. The trails were often marked with distinctive features, such as stone cairns or rock carvings, to guide travelers.

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Environmental Issues:
The major environmental issue of concern was the former WWII Laundry and Dry-Cleaning Facility just north of H-1. This facility was demolished in the late 1990’s. The Navy believes there were also several smaller clean-up efforts of small underground storage tanks. This site did have underground tunnels, underpasses and bomb shelters for personnel which may still remain buried.

Ongoing Discussions with the Navy:
The NASED team has engaged on several occasions with US Navy personnel to both inform and discuss the development. Discussions with the Navy involve alleviating possible security concerns due to the presence of bomb shelters and other possibly hazardous features that may remain buried on the site.

Manager for most of the housing areas. Construction was mostly wooden temporary barracks and Quonset huts. The Pearl Harbor expansion plan included five Housing areas to support the build-up for war and transitory housing needs at Pearl Harbor. The estimated projected number of housing units in the expansion plan was around 25,000 units. The specific Aloha Stadium site being looked at was for transitory housing (barracks) for Navy Enlisted personnel and considered a temporary WWII Cantonment. The drawdown in the Pacific was slower than expected. The best estimate by the Navy is that the Aiea Cantonment area was turned over to the State in the early 1950’s and it was most likely used as Low-Income Housing up until the 1970’s when Aloha Stadium was constructed. Prior to the time of Aloha Stadium there was the Nimitz Bowl created on part of the site to keep the troops entertained during the war with various events.

A NEW ALOHA STADIUM
Hawai’i’s Stadiums as Part of the Community Fabric

Prior to the existing Aloha Stadium, Honolulu Stadium was the only comparable venue that had the ability and capacity to host large scale events. Built in 1926, Honolulu Stadium was located at the corner of King and Isenberg Streets, the present-day site of what is now known as Old Stadium Park. Honolulu Stadium was constructed entirely out of wood and had the capacity to hold 25,000 spectators. Honolulu Stadium was used for a variety of events, including football games, concerts, and other community gatherings. However, in the late 1960’s, escalating issues with Honolulu Stadium prompted the decision to develop a new stadium that would provide adequate space for larger events. The new stadium, Aloha Stadium, was constructed on the current site of the stadium and opened in 1975.
In 2005, DAGS commissioned a planning study that identified several deficiencies of various degrees with the Aloha Stadium. The deficiencies included deteriorated areas and equipment, non-compliant code conditions, and considerable maintenance costs. The study determined that construction improvements are required in order to bring the stadium up to ADA standards and code compliance. The cost of these needed capital improvements is estimated to grow at a rate of approximately 5% per year, meaning that from a funding standpoint, $30 million of annual contributions would be required over a 25-year span. Since 2008, the State has spent approximately $117 million towards maintaining the existing stadium, a figure which includes on-going maintenance efforts. Nonetheless, this capital expenditure has not adequately addressed all of the existing stadium's deficiencies. Due to corrosion damage and associated costs that continue to escalate, the State has determined that the construction of a new stadium would present a much more favorable use of capital resources than the continued maintenance of the existing stadium.

In 2017, an update to the aforementioned 2005 planning study concluded that the existing stadium requires approximately $300 million in critical health and safety repairs as well as $121 million of additional improvements to bring the stadium up to ADA standards.

Aloha Stadium Timeline: 50 Years of Aloha

- **September 13, 1975**: First season opener.
- **April 1976**: The first NFL Exhibition Game featuring San Francisco's 49ers defeat the San Diego Chargers 17-16 before a crowd of 36,364 fans.
- **August 21, 1976**: The first NFL Exhibition Game featuring the Honolulu Stars defeat the San Diego Chargers 49-0.
- **December 1978**: First sellout crowd of 48,767 viewers watch eventual national champion USC defeat UH 21-5.
- **July 1986**: Frank Sinatra pulls in over 25,000 concert-goers.
- **December 1989**: UH makes first NCAS bowl appearance in 33-13 Aloha Bowl loss to Michigan State.

The Aloha Stadium

Located on the southern coastal plane of Oahu, Aloha Stadium is Hawai'i’s largest outdoor arena. The Stadium’s mission is to “meet the challenge of providing a first class arena where the dreams of our young people can be realized through participation in sporting and other special events; where the spirit of achievement can be nourished by the thrill of competition; where families can gather to share their cultural diversity with pride and a feeling of Aloha.”

New Aloha Stadium Entertainment District | Programmatic Master Plan

Draft December 16, 2020

- **January 1980**: First of 34 NFL Pro Bowl games to be hosted at the Aloha Stadium is announced to a crowd of 49,800.
- **March 1985**: Olympic Duncan Macdonald wins the first Great Aloha Run.
- **June 1989**: Superdog Mudracing comes to the stadium.
- **August 1987**: Colorado Springs, CO
- **February 25, 1984**: The Police hold their farewell concert with over 31,000 fans, making it one of the largest concert crowds to fill the Aloha Stadium.
- **December 1982**: A truck and tractor pull event, the Hawaii Super Pull, makes its debut and becomes an instant hit.
- **May 1979**: 18,348 fans come out to support UH’s Derek Tatsuno as he strikes out 12 in an 11-1 victory over Nevada Las Vegas.
- **March 1980**: First of 34 NFL Pro Bowl games to be hosted at the Aloha Stadium is announced to a crowd of 49,800.
- **November 1982**: Aloha Bowl debuts with Washington in a 21-20 victory over Maryland.
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- **December 1976**: Kalapana and C&K end the year with a great concert.
- **September 13, 1975**: Second of many Crews to appear 13-16 against Texas A&M for the stadium’s first regular-season game.
- **November 1982**: Stevie Wonder performs.
- **December 1989**: Robbie Knievel crashes in motorcycle event.

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- **May 1979**: First without roof 13-46 victory against eventual national champion USC, 11-13 against UH.
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**A New Aloha Stadium**

*Conceptual Design*

Four years ago, when the stadium was completed, the use of the facility for the first time was the kick-off to the “A New Aloha” campaign. A multi-use stadium and its configurations will allow multiple sporting configurations, entertainment, and full immersion. While the Football, soccer, and basketball.

**Existing Stadium Conditions and the need for a replacement**

The deteriorating structural conditions of the existing Aloha Stadium required near-immediate action and remediation. The weathering steel used in the original construction of the stadium was originally intended to prevent corrosion. Ultimately, within a short period of time, the nature of the corrosion of the weathering steel has done little to slow the deterioration of the structure due to the near-entire use of the weathering steel for every structural component of the building. These deficiencies and constant costs serve to slow the degradation of the steel but will never correct the essence of the issue of corrosion. Corrosion experiences while causing substantial safety issues. The increasing cost of corrosion mitigation will continue to rise as both known deferred maintenance issues and future continuous deterioration of components will become and will only become more apparent with time.

**Timeline**

- **January 1998**
  - Hawaiian Airlines introduces the first Hawaiian Airlines Pan-Pacific Championship soccer tournament.

- **February 21, 1998**
  - The stadium becomes permanently locked in its football configuration due to issues with the concrete pads lying underneath the mobile seat sections.

- **March 6, 2000**
  - The Eagles bring the Hell Freezes Over Tour to Aloha.

- **December 1, 2007**
  - Crowd of 49,566 see UH complete unbeaten (12-0) regular season and clinch school’s first outright conference championship.

- **February 2008**
  - Aloha Stadium hosts the Inaugural Pan-Pacific Championship soccer.

**References**

- [New Aloha Stadium Entertainment District](https://www.newaloahastadium.com)
- [Programmatic Master Plan](https://www.newaloahastadium.com/master-plan)
- [Economic Impact Study](https://www.newaloahastadium.com/economic-impact)

**Draft December 16, 2020**

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*New Aloha Stadium Entertainment District | Master Plan v1.38*

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*New Aloha Stadium Entertainment District | Programmatic Master Plan v1.38*
The State is proposing to construct a new stadium facility along with mixed-use development to create the NASED (New Aloha Stadium Entertainment District) development. Constructing a replacement facility at the current Aloha Stadium site in Hālawa provides a development opportunity for O'ahu, as well as the State of Hawai'i. Removal of the Federal and City deed restrictions on the project site has redefined the possible land uses and maximum development density of the property, which will attract new investment and create additional community assets through mixed-use development. Catalyzing this opportunity is the future HART Hālawa/Aloha Stadium Transit Station within the project area, which provides increased access for stadium operations and TOD (Transit-Oriented Development).

The proposed NASED, anchored by the new Aloha Stadium, will continue to serve as a civic focal point and gathering place, while increasing revenue and economic activity. The new stadium facilities will be surrounded by a vibrant and dynamic mixed-use district, which will create a strong and diverse urban center.

Goals
2.3

PROJECT VISION

NASED Vision

Create an inviting destination through the addition of retail and hospitality facilities, anchored by an appropriately sized, world-class stadium.

NASED Mission

The NASED Program will deliver a world-class and multi-purpose entertainment district that is able to respond to financial feasibility and evolving market demand.

Key Objectives

1. Create a community-centered district that:
   - Encapsulates the vision of the Proposed Action as a full-service, mixed-use development.
   - Adopts a delivery strategy that is flexible, adaptable and ultimately deliver value to the State of Hawai‘i.
   - Complies with and ensures that all applicable State of Hawai‘i Act 50 (2000) and HAR Chapter 11-200.1 are complied with and acted upon in good faith over the course of development.

2. Ensure that the masterplan developed:
   - Considers and responds to the whole of life development and operation of Proposed Action.
   - Adopts a delivery strategy that is flexible, adaptable and ultimately deliver value to the State of Hawai‘i.
   - Includes input from and collaborates with stakeholders and community members.

3. Deliver a series of district-wide initiatives:
   - Leverages technology and innovation to minimize operational costs and event overlay expenses, thereby creating a digital spectator opportunity; and
   - Maximizes potential revenue generation while maintaining operational efficiencies.

4. Support a green network and infrastructure through technology and design;
   - Support green interest and education through establishing water, green, and community spaces.
   - Invest in renewables and reduce emissions through sustainable energy and waste management practices.
   - Enhance the area’s use as a community gathering place through the provision of public programs and public spaces.
   - Promote community feedback through surveys of the area and the New Aloha Stadium.

5. Build consensus by promoting community engagement, input and interaction during the planning process, and appropriate fee for existing uses be feasible and operational.

Program Activities

- Ensure accessibility to the site through multimodal connectivity and accessibility.
- Create a community-centered district that:
  - Heighten the area’s use as a community gathering place through public programs and public spaces.
  - Support a green network and infrastructure through technology and design.
  - Promote connectivity between the New Aloha Stadium and the HART Station.
  - Increase accessibility to the site through multimodal connectivity and accessibility.
  - Create a vibrant, thriving community entertainment district.
  - Leverage technology and innovation to minimize operational costs and event overlay expenses, thereby creating a digital spectator opportunity; and
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displays, demonstrations, lessons, and souvenirs. The world renowned three-day hula competition. Lei Day is celebrated on May Day, and it is accompanied by a variety of events; the largest of which is the Lei Day Celebration held in Waikiki. Festivities include picnics, music, food, cultural demonstrations, and parades. The Aloha Festivals Floral Parade, the largest in the Pacific, and Hawaiian cultures present within the region. Festivities include the Grand Parade, Nagaoka Fireworks display, a variety of cultural dance and music performances, a craft fair and exhibition, the Governor’s Parade, and the Night in Chinatown Street Festival.

Chinese New Year

The 8.15 mile Great Aloha Run (GAR), Hawaii’s largest fundraising event, is held on Oahu’s North Shore, and is regarded to be the most popular surfing series. Considered to be the ultimate test of a surfer’s ability, the competition consists of three events: the Vans Triple Crown, the Billabong Pipe Masters. In addition to event-rich history and storytelling of Hawaii’s traditional and contemporary music. The festivities are highlighted by the Nā Hōkū Hanohano Award ceremony, honoring the achievements of Hawaiian artists.

Chinese New Year is celebrated on the 15th day of the Chinese lunar calendar. The festival is associated with the dawning of a new year and is organized to celebrate the spirit of renewal, good fortune, and happiness. It is a time for family gatherings and the exchange of gifts, particularly red envelopes containing money or candies. Traditional Chinese New Year activities include fireworks, dragon and lion dances, and the night market called the Night Market, which attracts thousands of visitors.

Japan

The Great Aloha Run is a popular annual race held in Waikiki, Hawaii, which includes a 10K race, a half marathon, and a 5K race. The event is known for its festive atmosphere, with participants dressed in traditional Hawaiian attire and costumes. The run is accompanied by live music, food stalls, and performances by local hula dancers and musicians.

Chinese New Year is a major holiday celebrated in Chinese communities around the world. It is observed on the 15th day of the Chinese lunar calendar and is marked by various traditions and customs, such as the burning of joss sticks and the lighting of firecrackers to ward off evil spirits. The festival is also a time for family reunions and the exchange of gifts, particularly red envelopes containing money or candies. Traditional Chinese New Year activities include fireworks, dragon and lion dances, and the night market called the Night Market, which attracts thousands of visitors.

Japan

Mele Mei Festival

Mele Mei is a celebration of Hawaiian music. The festival features various events, including concerts, live music performances, and cultural demonstrations. It is celebrated in downtown Honolulu and is accompanied by the Nā Hōkū Hanohano Award ceremony, honoring the achievements of Hawaiian artists.

The National Memorial Cemetery of the Pacific commemorates those who served in the Armed Forces from World War II to the present. The cemetery is located on the Punchbowl, a volcanic crater on the island of Oahu.

The ceremony is marked by a variety of activities, including the laying of wreaths, the reading of names, and a moment of silence. Participants also light lanterns with prayer messages, which are then released into the ocean. The ceremony serves as a reminder of the sacrifices made by those who served, and it provides an opportunity for family and friends to honor the memory of their loved ones.

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SUSTAINABILITY AND RESILIENCE

Sustainable Site Planning

Development within the Project should be provided with opportunities to enhance the site’s design and management of energy, water, and waste. The nutritional and metabolic systems within a stadium, such as energy generation, water use, and waste management, should be integrated into the project’s sustainable site planning and management. The Project should minimize site impacts by employing sustainable design choices, such as reducing water use and waste generation through the implementation of strategies that optimize energy, water, and waste management.

Establishing a Green Circulation Network

The New Aloha Stadium and Entertainment District should provide a network of green and pedestrian spaces that connect to adjacent neighborhoods and other transportation systems. This network should include green spaces, such as parks and trails, that are designed to provide opportunities for active recreation and social interaction.

Transportation accounts for nearly half of Hawaii’s energy consumption (48%). Development within the Project must recognize that due to current demand, the future of transportation suggests an increase in electric autonomous vehicles. Therefore, the Project should aim to reduce greenhouse gas emissions and reliance on fossil fuels by encouraging the use of both hybrid and electric vehicles. The transportation systems should aim to reduce traffic congestion by providing access to the adjacent public transportation network.

Water Efficiency and Management

The landscaping design should carefully consider the environmental conditions of the site. To achieve a comprehensive water efficient landscape, the Project should include native or noninvasive plant material that have low water demands. The use of sod or turf grass shall be limited. Although turf grass makes excellent ground covers, tolerates heavy foot traffic, stabilizes slopes, prevents soil erosion, and reduces dust and chemical air pollution, due to their lower height and higher transpiration, they require more water than other plant material. As an alternative, hydroseeding should be considered.

Optimize Performance by Utilizing Renewable Energy

Buildings account for nearly 40 percent of global energy use. Stadiums inherently provide large areas of roofing that could include solar collection via an array of collectors or photovoltaics. PV panels can also be implemented into rooftops of shade structures and other design elements throughout the Project. These arrays could offset utility usage and provide long-term paybacks.

Waste Management

Due to their short life cycle, stadiums generate an enormous amount of waste. The Project should implement waste management practices that include reducing waste generated from operations at the site and diverting waste through recycling and composting (if operationally feasible). Visible waste and recycling receptacles should be located along pedestrian paths throughout the site.
Waste Water Management

Through discussions with ENV, it is documented throughout the EIS that the total future buildout of the entirety of the mixed-use program of NASED may exceed the current available wastewater capacity for the site. The current amount of sewage disposal capacity is too small to accommodate the additional water demands of the new development. The total wastewater capacity for the current buildout is approximately 50 acre-feet per year and is contained within the existing Aloha Stadium Entertainment District. The future buildout is projected to require approximately 80 acre-feet per year, resulting in a need for additional capacity. Due to the presence of the 50,000 seat existing Aloha Stadium, it is known that replacing the existing facility with a smaller stadium (in the range of 15,000 to 30,000) would reduce the wastewater generation by a factor of 3 to 5. Therefore, it is conceivable that the demand for wastewater capacity in the future may be less than initially anticipated.

CONNECTION TO AN EVOLVING HONOLULU

Connecting NASED to Greater Oahu

In strengthening the external connectivity of the NASED, sustainable solutions for multi-modal transportation has been integrated into the development of the district. The connection between the site and the Greater Oahu Area being facilitated by a combination of the HRS, vehicular corridors, external bus and shuttle service, and pedestrian pathways. The presence of accessible multi-modal transit could also enhance economic stimulation for the city at large, encouraging visitors to travel to the site from more heavily trafficked tourist areas along the rail as well as promoting local residents of the site to travel more freely to retail and/or entertainment areas they would generally not frequent due to heavy traffic congestion.

Public Transit

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HART

In conjunction, the NASED development and accompanying HART site will naturally become an entryway into the overall development. In considering this, it becomes vitally important that the Aloha Stadium maintain a clear pedestrian connection to the HART station, supported by restructuring the bus-routes and roadways to direct traffic onto the HART site. This presents a key opportunity to turn the proverbial ‘front door’ into a centralized hub for retail, dining, and visitor amenities; capitalizing on the convenience provided by the existing infrastructure.

Enhanced Road Networks

On the opposite side of the site, Kahuapaani St. acts as the other major ‘gateway’ into the site development, serving as the entrance for all vehicular traffic coming from H1, H201, and H3. In order to sustain usage of the commercial development and stadium, it is critical that the road networks connecting the facilities to the development support the function and capacity this development may require. Strategic advancement of this connectivity would also improve the circulation of the site at large, creating a balanced transportation network.

Examples of how to achieve this include, but are not limited to, the following methods:

- **Street Grid:** Create an internal grid street network within the stadium site and the other development sites to improve connectivity. The grid network could also create development parcels for TOD.
- **Ring Road:** Provide a protected road to provide access to the other commercial vehicular users, with designated parking access to the other commercial users, while also maintaining pedestrian safety and connectivity.
- **Existing/New Intersections:** Provide intersection spacing that achieves signal coordination and minimizes circuitous pedestrian travel.
- **Intersection Reconfiguration:** Reconfigure intersections to accommodate modified traffic flows and be made safer for pedestrians.
- **Realign the existing one-way section of Salt Lake Boulevard to intersect Kamehameha Highway across from the Ford Island Bridge.**
- **Convert all sections of Salt Lake Boulevard to two-way travel to maximize connectivity and access to all users of the stadium and the larger community.**
- **Include new access points on both sections of Salt Lake Boulevard serving access for local residents and businesses, and provide for safe crossing between the two sections of Salt Lake Boulevard.**
- **Maintain a portion of the existing radial circulation pattern within the stadium area.**

ACCESSIBILITY AND SAFETY

Increasing Accessibility to the Site

Through improving multimodal connectivity to and from the site, the design provides opportunities for rail transit and bus services to be integrated into the Hālawa Rail Station, Aloha Stadium, NASED, surrounding community, businesses, and attractions. The success of this relies heavily on these services being both available and comfortable to use by creating pedestrian-friendly solutions that improve overall safety and compatibility within the larger community.

Multimodal Connectivity

The NASED development concept has been developed to provide a comprehensive multimodal connectivity infrastructure, including rail transit, bus services, and pedestrian access to the project area. This includes the integration of the existing HART rail station and bus stops, as well as new pedestrian and bicycle connections to the stadium and surrounding area.
Site Access Points

The NASED development is surrounded by critical infrastructure which serves greater Oahu. Site access for NASED will need to be considered both during construction and during full operation. The manipulation of streets owned by either HDOT or CCH will require careful coordination and group planning. As an example, adjusting on-ramps for H1 or H3 may take an act of US congress since the highways are federal infrastructure.

EQUITY AND INCLUSION

Encouraging a Variety of Lifestyles

It is vital to encourage the intermingling of lifestyles by providing a mix of housing options and types. A variety of lifestyle opportunities and types will encourage a balance of housing options and types. To preserve the socioeconomic diversity of the Hālawa area, and avoid economic-driven displacement, a development plan needs to provide a variety of housing types and sizes. This focuses on housing that appeals to a diversity of lifestyles, which could include transit-oriented young families, empty nesters, and singles. It is important to design the development to promote neighborhood cohesion and a sense of belonging. Special attention should be given to promoting live-work areas on site as well as ease of travel on and off the site for residents who work elsewhere on the island.

The urban design of NASED should enhance the existing connections between urban fabric and provide a sense of place-making, with the intent of adding to the overall sense of belonging. It is necessary to create diverse and unique spaces that encourage the presence of residents throughout the project to create a strong sense of community and belonging to the neighborhood.
In order to maximize potential value, site and building design should take advantage of quality of life amenities often provided by residential spaces, such as mountain and coastal views and prevailing breezes, courtyards, and nearby community amenities as the higher density area creates. To account for this, the site plan is intended to accommodate a balanced mixture of multi-family housing options, including lease-lended apartments, conventional condominiums, and premium condominiums. High density residential developments, such as the aforementioned resort style units, will likely be most popular with families looking for housing that can provide the same level of indoor outdoor connectivity and entertainment as the higher density area.

Residential and Housing Diversity

The development of the project has been designed considering offering a variety of housing units to meet the needs of diverse housing markets. This variety includes unit sizes, finishes, and amenities appropriate to the surrounding neighborhoods, in order to accommodate a diverse range of housing types. To satisfy the demand for high density housing, developers will seek to establish a vibrant community for business, entertainment, and livelihood that this plan seeks to create. To account for this, the site plan is intended to accommodate a balanced mixture of multi-family housing options, including lease-lended apartments, conventional condominiums, and premium condominiums. High density residential developments, such as the aforementioned resort style units, will likely be most popular with families looking for housing that can provide the same level of indoor outdoor connectivity and entertainment as the higher density area.

Accommodations for Visitors

The economic vibrancy of the NASED site will be enhanced through the addition of a diversity of retail and restaurant options. Quick lunch spots for people who work on site as well as restaurants and shops along the frontage to provide amenities for the surrounding neighborhoods should be considered. The New Aloha Stadium, for its part, could provide a space for smaller scale events or overflow from the main stadium. These options and services will offer an environment that is vibrant and engaging for visitors. The New Aloha Stadium, for its part, could provide a space for smaller scale events or overflow from the main stadium. These options and services will offer an environment that is vibrant and engaging for visitors.

New Aloha Stadium Entertainment District | Programmatic Master Plan

The New Aloha Stadium

The economic vibrancy of the NASED site will be enhanced through the addition of a diversity of retail and restaurant options. Quick lunch spots for people who work on site as well as restaurants and shops along the frontage to provide amenities for the surrounding neighborhoods should be considered. The New Aloha Stadium, for its part, could provide a space for smaller scale events or overflow from the main stadium. These options and services will offer an environment that is vibrant and engaging for visitors.
The Surrounding District

While the stadium is the only true draw to this area, in the future it will be supported with an area of retail, restaurants, and bars to provide a venue for stadium visitors to come early and stay late for stadium events. This creates the entertainment district that provides a variety of options for people to visit the stadium whether it be a single event or part of an entertainment venue for the entire day, enhancing the overall experience for all those who visit. In order to achieve this goal, the ability to expand and change the types of entertainment options available is key.

Transit Oriented Development

The TOD nature of this site provides unique opportunities for this site to be the premier entertainment venue in the State. By having the anchor of the Stadium as a major draw, the TOD nature of this site can allow for easier access to and from the site. With the TOD nature of the site, the ability to expand and change the types of entertainment options available is key.

Economic Diversification and Sustainability

NASED will be a more sustainable development due to its economic diversity which will allow it to weather downturns by continuing certain functions when others are diminished. Special attention should be given to ensuring a diversity of amenities to make the site a destination for people from every walk of life: singles, couples, families, a wide range of ages, interests, and socioeconomic statuses. The era of Covid-19 has created new challenges for Hawai‘i, with tourism, a cornerstone of the economy, nearly entirely diminished due to travel restrictions. It is assumed that it may be some time before the recovery of tourism and travel returns to pre-pandemic levels. These economic conditions are being factored into the NASED development, and it is hoped that this economic diversification of the development can help the site weather the challenges of the current environment better by creating a truly unique and diverse experience that helps not only the site but the surrounding areas as well.

Guidelines
Hawaiian Names for Hawaiian Places

To normalize the usage of Hawaiian words throughout the District’s Hawaiian name of place throughout the development process, Hawaiian names were selected for different areas throughout the District. The names were selected to encourage usage and connection to the history of the site.

Hālawa Makai or Hālawa Kai
To support the connectivity to the Hālawa Rail Station, the suggested name for the portion of the parcel nearest to the ocean shares the name of the rail station (Hālawa) and utilizes a widely known Hawaiian directional term – makai – meaning towards the ocean. It also utilizes the terms mauka and makai to maintain continuity with the stadium, in which the directional terms “mauka” and “makai” are used.

Hālawa Mauka or Hālawa Uka
The parcel mountainward of Hālawa Makai is suggested to be called Hālawa Mauka, utilizing the commonly known directional term – mauka – meaning towards the mountains. These can be modified as needed to accommodate wayfinding utilized for the new stadium.

Āliapa'akai
Āliapa'akai is the traditional name for “Salt Lake.” It references a traditional mo’olelo (story) of Pele and Hi'iakaikapoliopele. This name was suggested for the southern portion of the District based on input from the Salt Lake - ‘Āliamanu neighborhood board, which has jurisdiction over this area.

Place-Based Inspiration
Āliapa’akai is the traditional name for “Salt Lake.” It references a traditional mo’olelo (story) of Pele and Hi'iakaikapoliopele.

Overall Masterplan
The overall masterplan provides an indicative example of the new master planning solution concept. The number of the city blocks remains consistent with the stadium. The footprint of the development will be defined by the master plan.
Does not account for non-simultaneous use parking areas or % reduction due to HART.

• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium
• Phase 1B refers to the initial tranche of Mixed-Use Development
• Phase 2 refers to the secondary tranche of Mixed-Use Development
• Phase 3 refers to the final tranche of Mixed-Use Development
PEDESTRIAN STUDY

Public Gathering Areas

The depression left by the removal of the existing stadium was filled with soil removed from the New Stadium. This fill is sculpted into a circular park and mult-use green space for public gathering, an amphitheater, and a viewing area for the Main Stage of the New Stadium. The amphitheater aligns with the stage created for the New Stadium, allowing for live overflow viewing of large events or potential live streaming remote events, such as off-island UH sporting events on the amphitheater lawn.

The amphitheater can comfortably seat around 10,000 people. The club and rooftop venues have the ability to look down on either the stadium or the amphitheater. The upper park of the amphitheater is ringed by an overhead circular shelter providing areas for vendors, picnics, and other events like farmer’s markets, food festivals, or art fairs.

Surrounding the amphitheater park, the existing parking lot will be improved and expanded to replace some of the lost parking from the construction of the New Stadium. It will also have restrooms for fans and be able to host the reconfigured Swap Meet. The 50th State Fair will be unmoved and remain on the South Hālawa Lot.

3.2 Phase 1A and 1B Pedestrian Traffic Study

The pedestrian study highlights key considerations of the development. Most importantly, the NASED development must be pedestrian-friendly. Pedestrian development is intended to serve the adjacent residential areas and the residents who will live within the district. It will allow as many pedestrians from the community to take advantage of the amenities as possible.

Phase 1A and 1B Pedestrian Traffic Study

Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium. Phase 1B refers to the initial tranche of Mixed-Use Development.
The stadium is left open for expansion, either permanent or temporary. This allows for additional seating areas that can be set up and taken down. The stadium can be used for various events, such as concerts, games, and other activities.

The view from the stadium bowl is to the lush mountains to the south. The fashionable, serviceable, and aesthetically pleasing design of the stadium is based on the view to the east. The Hall of Fame, the Team Store, and the Ticket Offices are accessible to the east. The views from the premium areas, loges, and clubs are toward Pearl Harbor and Aiea Bay. The stadium is very open to allow for the breezes to blow through and take advantage of natural ventilation. Even the suites can be opened front and back to allow for air to flow through.

The 360-degree concourse is open to the field so one is never far from the action. The roof structure provides protection from sun and rain. Multiple loges and clubs also provide unique, relaxed opportunities to view a game. The roof-top clubs on the Mauka side of the stadium provide swimming, playing yard games or relaxing in a cabana. Rather than being a giant venue sitting in a sea of parking, the new stadium will blend into the full development.

Upon completion of the Stadium, the existing Aloha Stadium will be removed as sustainably as possible. Amenities and memorabilia can be salvaged and re-used or sold. The steel structure will be taken down and recycled. The concrete sub-base will be filled and the existing parking lots need to be repaired, improved and expanded. The PMP design prepares for full access of stadium staff and fans to the New Stadium while this next step is under way. The existing Aloha Stadium will be removed as sustainably as possible. Amenities and memorabilia can be salvaged and re-used or sold. The steel structure will be taken down and recycled. The concrete sub-base will be filled and the existing parking lots need to be repaired, improved and expanded.

The Stadium bowl is a C-shape, with the open team side of the stadium facing away from the sun. Putting the main stage at the 50-yard line, rather than in the endzone puts the stage closer to a larger number of fans, minimizes the number of seat kills and doesn't eliminate any of the premium seating (suites, loge, club, etc.) so the value of these seats is maintained for sports or concerts. The eastern side of the stadium is sunken down into the site and thusly protected and not visible from the surrounding highways. The stadium staff has a dedicated parking lot and stadium entry to separate them from fans on event days. The stadium has three (3) main gates. The Makai Gate is centered on the western side of the stadium will receive the majority of visitors coming from the HART station. The North Mauka Gate is on the northeast corner of the stadium and will serve the visitors coming from the circle parking lot. The South Mauka gate is located on the southeast side of the stadium and will receive visitors coming from the north and south Hālawa Parking lots.

The Stadium in the PMP is a design that is unique to Hawaii. The design of the stadium from side to side is based on the program that can be outward facing on non-game days and inward facing when there is an event. The Hall of Fame, the Team Store and the Ticket Offices are accessible to the east. The views from the premium areas, loges, and clubs are toward Pearl Harbor and Aiea Bay. The stadium is very open to allow for the breezes to blow through and take advantage of natural ventilation. Even the suites can be opened front and back to allow for air to flow through.

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INNOVATIONS IN DESIGN

INNOVATIONS IN DESIGN

1. **Unique Exterior**
   - Iconic Hawaiian Design - Framing the View - Picturesque Views of Mountains, Laid-back Hawaiian Feel (Loge ‘Cabana’ Decks, Open Air Club Lounges)
   - Openness of Building (Open-air Suites, Clubs, and Concourses)
   - 360 Concourse-Event Connection
   - Connection to Nature
   - Roof Design – more than a mere formal element. Should consider light transmission and diffusion performance. Balance of natural light and best comfort conditions. Should consider performance related to stadium acoustics; sectional geometry effect on sound created by spectators. Should consider sun and rain protection – allow for vertical shelter of spectator stands.

2. **Unique Interior**
   - Visual Acuity – proximity of fans to event
   - Majority of Fans on Home Team (Shaded) Sideline
   - 50-Yard Line Main Stage – Bringing the Event closer to the Majority of Seating Bowl – Minimize Kill Seats – Greater number of seats with better value related to focal point of event
   - Capacity for Expansion – Provide easy and natural expansion in the future without compromising spectator experience, life safety, and intended aesthetic.
   - Temporary (addition of bleachers on East Concourse)
   - Permanent (Extension of Upper Bowl above East Concourse)
   - Value of expansion is a better price point; ticket added is a better seat; not adding the worst seat(s) in the house for a more expensive construction cost.
   - Receives natural breezes from NE and SE
   - Stadium forms to site and context; not merely an oval plopped down into the parking lot.
   - Cognizant of keeping existing stadium open during construction of the New Aloha Stadium.

Expansion Opportunities

While the final sizing of the stadium is being determined (27,500-35,000), the expectation is that the new facility will need to have the ability to provide expanded seating opportunities. Larger events may require additional seating, or the future may demand consistently higher attendance capabilities. Either way, the new stadium should provide accommodations for temporary additional seating.
Extending Event 365-Days Per Year

- Access to Stadium Spectator Amenities for Adjacent Site Functions – Restrooms | Concessions | Guest Services & First Aid (Swap Meet, Amphitheater, State Fair)
- Access to Stadium Program Areas on Non-Game Day (i.e. Food Hall, Hall of Fame, Team Store). Arranged to allow Stadium-side/Game-Day access as well as Non-Game-Day access from adjacent Development.
- Club and Premium areas arranged to allow Non-Game Day Access | Use, Secured from remainder of Stadium areas

Multipurpose Event Center

- Multi-purpose Event Center facility which happens to also accommodate Affordable Event Viewing
- Ability to close off areas of stadium to enable events without having major stadium operations

Opportunity to change our basic layout to another event

Architectural

- Utilize sun screening potential – Orientation of Existing Stadium – Placement of Existing Stare Field and Stage/Roof design to allow views (afternoon)
- Multi-purpose Event Centric Facility which happens to also accommodate Athletic Event Viewership
- Ability to close off sections of stadium for smaller events without hurting overall stadium operations
- Operationally quick change over from one event to another event

Environmental Considerations

- The visitor experience at Aloha Stadium needs to consider environmental conditions people will experience. The environment on Oahu is warm with occasional rain, so a roof system to alleviate direct sunshine and precipitation should be considered when designing the new facility.
- Football games and many other events last a few hours, and the visitor experience during long games can suffer when fans are subject to the warm sunshine for too many hours. Also, in the current Aloha Stadium, the majority of visitors have no roof coverage from precipitation. The goal of the PMP master plan concept is to provide this coverage to the majority of visitors from precipitation. The cost of rain and snow coverage is covered in the budgetary phase is not included.

Views

- The PMP concept stadium seeks to build upon views created by the regional geography. The existing Aloha Stadium orientation aligns the 50 yard line in the makai direction, but the existing structure is not readily designed to orient with these views. Previously, when the stadium was capable of transforming between football and baseball configuration, if the stadium was in a baseball configuration then the open ends of the stadium would frame views makai towards JBPHH and mauka towards Oahu’s iconic mountains. This PMP conceptual design seeks to capture the stunning views by nature of the seating bowl and stadium. Fans within the bowl will have picturesque views towards the mountains, and fans along the makai/western concourses will have views towards JBPHH.

Orienteering: Sun, Wind, and Shade

- This is a site with a sunny slope that is not suitable for pedestrian use and the C-shaped roof design creates shaded pedestrian pathways. The design of the roof and the addition of the C-shaped roof to the U-shaped roof of the stadium produces shading during the sunny periods. The purpose of the C-shaped and rectangular roofs is to provide adequate shading for pedestrian pathways and to work in concert with the pedestrian pathways and roof ventilation.

Stadium

- The SHF concept stadium seeks to build upon views created by the regional geography. The existing Aloha Stadium orientation aligns the 50 yard line in the mauka direction, but the existing structure is not readily designed to orient with these views. Previously, when the stadium was capable of transforming between football and baseball configuration, if the stadium was in a baseball configuration then the open ends of the stadium would frame views makai towards JBHPH and mauka towards Oahu’s iconic mountains. This PMP conceptual design seeks to capture the stunning views by nature of the seating bowl and stadium. Fans within the bowl will have picturesque views towards the mountains, and fans along the makai/western concourses will have views towards JBPHH.
The most significant amount of mixed-use development in the PMP happens on the HART site. Currently, the HART site contains the recently completed HART station, a bus transfer terminal and parking for 600 cars. Given the location of this property, with the HART station, the intersection of Salt Lake Blvd and Kamehameha Highway and being between the NASED Site and the stadium, it is currently being underutilized and not maximizing its potential for development. The PMP calls for new connections to the HART station, an entry plaza, a retail experience, a hotel, a significant amount of parking and 700 residential units.

The HART station is connected directly at the upper level to an elevated retail plinth running parallel to the train track. This retail serves anyone getting directly off the train. It also contains direct access to parking and lobbies for the residential tower. Exiting the HART station on the ground level brings visitors to the HART Plaza.

Directly south of the HART site is the covered bus transfer terminal and parking garage. Directly to the north is the Pu‘uwai Momi site. The HART site is the focal point of the NASED Site, with the HART station and bus transfer terminal serving as the primary transit stop.

From the HART station, visitors walk along an outdoor retail promenade with retail, restaurants and entertainment venues on both sides. At-grade retail on both sides allows for quick and convenient shopping going to or from the HART station. The second level of retail on the south side connects into the parking garage and residential towers and provides opportunity for restaurants and bars to overlook the mall below. A gently sloping land bridge continues the pedestrian experience over Salt Lake Blvd and to the Stadium and the rest of the NASED development.

The hotel lobby is accessed from the HART site on the north side as part of the pedestrian mall and from Salt Lake Blvd on the south side. The hotel contains an open and fluid connection to the retail area, the lounge and bars, and rooftop spaces. The hotel is connected to the residential towers via the porte cochere and parking garage. The lobby of the hotel is open through the building and also serves as the lobby for one of the residential towers. Elevators from the lobby take guests and residents up through the garage to the hotel rooms, hotel amenity deck and residential units. Both have views either toward the stadium, Hālawa development and mountains or out towards Pearl Harbor.

The bus transfer terminal is located on the ground level of the parking garage on the south side of the HART site with easy connections to the HART station. This parking is located in the northern part of the site, providing for the future demand of long-distance bus riders. The bus transfer terminal is intended to be an area connected to but separate from the HART site. The parking garage above the bus transfer terminal contains 5 levels of parking for the residential towers and for HART. This parking is located behind and above the retail shops with convenient access to the elevated plinth level and the HART station. The 600+ parking stalls that were previously located on grade for the HART station are now located in the garage. Above the highest level of screened parking is a second elevated plinth for the residential towers. This serves as the amenity deck with pools, cabanas, yard games and lush plantings. It provides a private oasis for residents, separate from the rest of the Hālawa site. It also connects across the retail mall to the hotel tower. Convenient elevator connections bring residents down to any level of the garage or retail areas below.

The elevated plinth level of the HART site is also designed to allow for a bridge connection to the Pu‘uwai Momi site to the south, either for an immediate connection to the existing neighborhood or for a connection to a revitalized Pu‘uwai Momi site in the future. This connection reinforces the importance of preserving potential connections to all the neighborhoods and districts surrounding the NASED Site.
TRAFFIC AND CONNECTIVITY

Traffic Revisions

Event-Day Traffic

Vehicular traffic for events at the existing Aloha Stadium is an identified issue for the current development. Traffic congestion occurs for hours leading up to major events (such as UH football games), with many tailgaters and visitors congregating throughout the surrounding neighborhoods for the hours leading up to parking gates opening. Traffic mitigation principles of the NASED PMP are based on the foundation of the Hālawa Area TOD Plan.

Mitigation

Traffic mitigation for the NASED development is best managed through multiple simultaneous strategies. Stacking vehicles during large events, strategic locations for future structured parking garages, and a variety of multi-modal transportation options will all serve to alleviate traffic. The foundations of the NASED PMP emulate the traffic mitigation features of the Hālawa Area TOD Plan for the simple reason of the desire to create a truly ‘Transit Oriented Development’.

Phase 1A and 1B Typical Day Traffic

Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium. Phase 1B refers to the initial tranche of Mixed-Use Development.
Phase 1A and 1B Event Day Ingress

Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium. Phase 1B refers to the initial tranche of Mixed-Use Development.

Egress for the Phase 1 projects will be a critical item to mitigate, both on a day to day basis as well as for large events. With increased uses on site there will be an increase in the amount of traffic, so on-site queuing and dynamic lane-changing strategies will need to be employed. A key component of the PMP egress strategy for large events are alterations portions of Salt Lake Boulevard.
Phase 1A & 1B Stacking

A key feature of mitigating traffic for the NASED PMP is the stacking of cars. Stacking vehicles within the boundaries of the entertainment district provides several key benefits. First, to help maintain traffic flow in the streets and roads adjacent to the development, there must be as much capacity as reasonable to provide for stacking vehicles combined with a state-of-the-art fast and efficient ticketing system for fast entrance. Over time, additional structured parking will need to be provided in convenient proximity to the developments.

The strategic location of parking benefits visitors during events, as well as providing an everyday amenity for residents, neighbors, employees, transit riders, and tourists.

Phase 1A & 1B Swap Meet & 50th State Fair

As soon as construction for Phase 1A & 1B begin, the Swap Meet will need to be altered into a new configuration. Almost the entire western/makai half of the circle of parking surrounding the existing stadium will be lost to construction site. Fortunately, the Swap Meet can easily fit on the eastern/mauka half of the parking lot surrounding the existing stadium. This will allow the Swap Meet to continue operations while the new facility is built, the stadium is demolished, and either an amphitheater or other amenity will be built in the former depression. The strategic location of parking benefits customers during events, as well as providing an everyday amenity for residents, neighbors, employees, transit riders, and tourists.

Phase 1A and 1B

Phase 1A and 1B refer to the New Aloha Stadium and the demolition of the existing Aloha Stadium. Phase 1B refers to the initial tranche of Mixed-Use Development.
Full Build Typical Day Traffic

The full-build daily traffic diagram provides an example of the complexity and cohesiveness expected for the circulation at NASED. Strategically placed on-site parking garages will provide parking for NASED residents, visitors, and patrons. A central main street, a pedestrian spine of circulation, with on-street parking, and located retail and commercial activities balance multi-modal transportation options. Entry via the bridge with access for vehicles and pedestrians being considered.

Full Build Event Day Ingress

The full-build event ingress for NASED will need to substantially differ from the parking system in place at the existing stadium. The need for allowing residents and visitors on-site at all times means that the parking gates will be eliminated. Instead, visitors to NASED will be able to utilize specified parking garages for event parking. Parking signage on-site will indicate to visitors which garages they should park in, and technology such as smart phone registration may be employed.
Full Build Egress Day

Traffic congestion related to people departing from large entertainment venues is nearly inescapable from the experience. The NASED strategy for mitigating traffic congestion takes several approaches. First, all exit gates across the site are utilized in conjunction with the reversible traffic flow on Salt Lake Boulevard to help visitors leave quickly. Second, the function of the site as an entertainment district means that visitors will have a variety of options for entertainment or food and beverage choices. Rather than fighting through the crush of traffic leaving a concert, visitors will be able to stop for a bite to eat or a drink prior to their departure. The multiple transportation options (such as ride-sharing, driving, bus, HART, etc.), as well as the numerous on-site amenities will provide relief to vehicular congestion.

PHASE 2 and 3 - INGRESS
STADIUM GATE A AND PARKING
STADIUM GATE B AND PARKING
STADIUM GATE C AND PARKING
STADIUM GATE D AND PARKING
PEDESTRIAN PATHWAYS

Full Build Swap Meet

As the NASED development reaches full buildout, the expectation is that there will no longer be large expanses of open surface parking lots. Instead, the Swap Meet and events such as the 50th State Fair will be able to take advantage of the new amenities featured in the overall master plan design. The 50th State Fair could potentially use the amphitheater rather than the Lower Hālawa Lot which could open opportunities such as including concerts and performances on the amphitheater stage in conjunction with the Fair. The Swap Meet will be able to take advantage of the new amenities featured in the overall master plan design, which could include covered stalls, electrical power, and other swap meet amenities. In addition to the option of having a covered stall, other swap meet amenities such as electrical power could also be used for tailgating at UH games or other stadium events.
Salt Lake Boulevard Modifications

The highest amount of pedestrian and vehicular traffic from the SADD (South and Downtown) and the locations of the Aloha Stadium on the DEG (Downtown Entertainment Gateway) corridor is Salt Lake Boulevard. This corridor is a critical traffic artery that presents both opportunities and challenges for alleviating traffic backups while facilitating maximum pedestrian circulation.

A key component of managing the thousands of visitors who will convene at the entertainment district will be Salt Lake Boulevard. This corridor is a critical traffic artery that presents both opportunities and challenges for alleviating traffic backups while facilitating maximum pedestrian circulation. Pedestrian bridges crossing Salt Lake Boulevard provide two key benefits. First, from a safety perspective, a pedestrian bridge keeps visitors separate from potential hazards associated with mixing thousands of visitors and vehicles. Second, the complete separation of pedestrian and vehicular traffic provides visitors with the ability to cross the street without impeding the flow of traffic. Maintaining as much traffic flow as possible is critical to ensuring traffic jams are minimized due to event-related traffic.

The 'Essex' portion of Salt Lake Boulevard is envisioned to be altered to allow for dynamic lane changes. Similar to the dynamic lanes being implemented successfully across Oahu such as the rush hour lanes in the mornings along Kalaniana'ole Hwy in east Honolulu, the alterations to Salt Lake Boulevard would allow game day traffic to more easily flow depending on the timing of the event. Daily traffic flow would maintain nearly identical flow and functionality as exists on the current site. One-way traffic would be maintained during the summer. The design would include a pedestrian bridge crossing Salt Lake Boulevard to connect the south and north portions of the development.

Existing Parking and Gates:

This diagram and the next series of parking diagrams depict a possible scenario for parking and event logistics during the build-out of NASED. The final decision for the amount of parking and traffic mitigation measures will occur between the Stadium Authority and the selected developer. The main idea is to allow more traffic to flow into the NASED development leading up to major events, while also being able to change at an appropriate time and allow for a higher volume of visitors to exit at a faster pace. Additional lanes would be added to Salt Lake Boulevard to increase the potential of vehicle and pedestrian traffic. The changes would also benefit the community, which would benefit from increased development.
Phase 1A.1 Parking and Gates: Stadium Event Day
• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium

Phase 1A.1 Parking and Gates: Swap Meet
• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium
Phase 1A.1 Parking and Gates: 50th State Fair

• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium.

Phase 1A.2 Parking and Gates: Stadium Event Day

• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium.
Phase 1A.2 Parking and Gates: Swap Meet

Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium.

Phase 1A.2 Parking and Gates: 50th State Fair

Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium.
Phase 1A.3 Parking and Gates: Stadium Event Day

• Phase 1A refers to the New Aloha Stadium and the demolition of the existing Aloha Stadium.
Phase 1A.3 Parking and Gates: 50th Street

PUBLIC TRANSIT

The Hālawa Area TOD Plan establishes a set of guidelines which are drawn to enhance and accommodate all forms of transportation within the entertainment district. The plan includes public transit, pedestrian, bicycle, and private transportation strategies as they relate to both the uses at NASED and the adjacent residential and commercial uses. In addition, transportation improvements are encompassed in the Hālawa TOD plan targeted throughout the Hālawa Valley area as part of the Hālawa TOD plan. The plan was developed in consultation with the Hālawa Valley residents and businesses to provide a smooth transition and to accommodate all site functions related to both stadium events and the residential, commercial, and retail operations within the development. Moreover, it is critical that the NASED plan includes a strong pedestrian connection for the neighboring residential and commercial district to the development. To complement the pedestrian connections, bicyclists and bicycle access is also provided throughout the NASED PMP. The plan also includes a strong residential component to the development with the neighboring areas with the development while providing quality opportunities for the Hālawa Valley residents. The plan was developed in consultation with the Hālawa Valley residents and businesses to provide a smooth transition and to accommodate all site functions related to both stadium events and the residential, commercial, and retail operations within the development. Moreover, it is critical that the NASED plan includes a strong pedestrian connection for the neighboring residential and commercial district to the development.
Phase 1A & 1B Multi-Modal Traffic

The Aloha Stadium HART Station provides more benefits than simply bringing riders to the NASED from other stations. The Bus has also established dedicated bus stops for the new station, and riders will have the ability to take either the train or the bus to events at the stadium such as UH games, or even just to eat in a restaurant within the district. High-volume event traffic will be reduced by rail and bus, plus the NASED PMP seeks to actively promote ride-sharing platforms such as Uber or Lyft. Dedicated ride-sharing locations can be assigned throughout the district to align with key landmarks. In the NASED PMP, ride-sharing locations are arranged near the HART Station, on either side of the new stadium, and in the lower Hālawa parking lot towards the south end of future phase development. Additionally, on-site people movers are envisioned due to the scale of the development. The goal of having hundreds of residential units distributed throughout the development would justify the people moving shuttles and provide accessibility across the development to all.

Full Build Multi-Modal Traffic

The most obvious transportation method for many visitors to both the current and future Aloha Stadium will be car. Vehicular traffic is an identified issue for the existing Aloha Stadium, with traffic congestion being a real issue. The true goal of a successful multi-modal transportation strategy in the NASED PMP is to reduce as much vehicular traffic as possible while providing the most flexibility for all visitors to the development. Rail, bus, bicycle, pedestrian, ride-sharing, and other means of transportation will all assist in providing a better experience to both visitors and neighbors to the NASED.
VIEW SHED ANALYSIS

The goal of the design of the district is to preserve the value of the overall viewsheds from the surrounding areas. The master plan includes four primary zones: the entertainment district, the new stadium, the new parking garage, and the surrounding areas. To accomplish this, the master plan includes a building height and density regulation throughout the site, including areas with special permit requirements to ensure key visual elements are preserved. Building setbacks are designed to frame key natural and man-made elements that are valued in current viewsheds. This care should be made when viewing from the site as well. Using massing to frame views of the Koolau Range, Pearl Harbor, and other important features surrounding the site is imperative.

Beyond the spatial considerations of massing on site, the design of new buildings and open spaces must concentrate on positively impacting views both on and off site. No blank or unadorned walls should be left to spoil a view. The addition of vegetation, artwork, or appealing screening elements can all be used to eliminate any eyesores. There should be locations throughout the site that are specially designed to emphasize appealing views surrounding the site and those views from the site that are of particular value and value to the public. View shed studies are made by the exploration of the surrounding areas of the site and identifying where important natural features exist. A conceptual model is then created for the development after considering all the development will take on the new building's relationship to the immediate surroundings. This model is then used to evaluate the impact the new development will have on the views. Additional view shed studies should be done with any major changes to the design of the master plan. The current studies are taken from eight publicly accessible locations:

1. from Rainbow Bay Marina, 2. from Aiea Bay State Recreation Area, 3. from Aiea Heights Dr near Kihue Pl, 4. from the corner of Poko Rd. and Poko Pl, 5. from the corner of Hālawa Heights Rd. and Ulune St, 6. from the corner of Kahuapaani St. and Salt Lake Blvd, 7. from Ohenana Loop, and 8. from the corner of Kalaloa St. and Salt Lake Blvd. These locations can be seen on the following map.
CONSTRUCTION PHASING

Construction Phasing

Construction Phase 1A and 1B

The Construction Phasing of the concept PMP is segmented to accomplish the following:

1. Create connectivity within the site and to the surrounding areas: The new street grid is designed to provide pedestrian and bicycle connectivity throughout the site. The network of pedestrian-friendly walkways and bicycle paths are separated from vehicular traffic, creating safe routes for pedestrians to travel throughout the site, while also allowing for vehicular traffic to flow more freely. In other areas, they exist in the same location, running parallel to create a typical main street feel, mixing cars and people and retail shops. These pathways also reach out to the surrounding communities to allow residents that do not live on site to access the site very easily and enter directly onto these pedestrian routes. The Pu‘uwai Momi and Makalapa neighborhoods south of the site, the Pearl Harbor Visitor’s Center and Pearl Harbor Bike Path west of the site and the Aiea Neighborhood north of the site all have pedestrian bridges over busy roadways directly into the Hālawa trail network.

2. Provide vehicular ingress and egress to the site with minimal impact on the existing highway network: The Hālawa site is currently set up with 4 gates for access to parking and events. With the changing of the function of the site from a purely Stadium site to a Mixed-Use site, these gates need to adapt. The PMP maintains access to the site from Kamehameha Highway through Gate 2 at the north end of the site. The PMP improves access to the site from Salt Lake Boulevard and Kahuapaani St at Gate 3 and Gate 4 by moving the gates further into the site and increasing the amount of stacking available for vehicles. The PMP also relocates Gate 1, formerly one of the primary access points of the site, and provides a small number of VIP vehicles entering close to the stadium. The roads and highways around the site are unchanged.

3. Maintain activities on site during the course of construction and beyond: The existing Aloha Stadium needs to be maintained at a level that is commensurate with the needs of the events scheduled over the duration of construction of the new stadium. University of Hawaii Football home games will need to be played and scheduled concerts will need to be accommodated. Additionally, the Swap Meet must occur every Wednesday, Saturday and Sunday and the 50th State Fair will be held in the summer. The PMP allows for all of these conditions to be maintained, as well as providing an environment for continued development on the site.

4. Allow for a seamless transition to future development: The PMP construction phase 1 is designed as part of a whole site master plan. This is critical to creating continuity between the initial development and any future development on site. For the site to reach its full potential, it must be a cohesive whole with all of the connections and roads and mix of uses working together. The PMP is divided into conceptual districts by phase, but these districts all blend together to create the full Hālawa development.
Phase 1 - Sequence A

1. Remove Stadium Gate 1 and create new walkway.
2. Install new access from Salt Lake Boulevard.
3. Add remote parking improvements along Salt Lake Boulevard.
4. Add new pedestrian improvements at expanded eastern bridge over Hālawa Stream.
5. Add new vehicular improvements along.
6. Add and relocate Stadium Gate 2.
7. Clear the site to create a construction zone for the new stadium.
8. Reduce 30 feet per cast iron duct along Hālawa Stream.
9. Add new pedestrian improvements in the existing stadium area.
10. Remove any temporary structures to keep the ongoing operation.
11. Modify 30 feet from the area of the new stadium.
12. Remove all pedestrian walking paths including existing pedestrian.
13. Connect new walkway and loading dock area, resulting from new usage.
15. Complete new parking, including plaza, resulting from new usage.
16. Relocate construction boundary to the area.
17. Reduce 30 feet per cast iron duct along new pedestrian.
18. Add new pedestrian improvements along the new pedestrian.
19. Add new pedestrian improvements along.
20. Clear the site to create a construction zone for the new stadium.

PHASE 1A.1

- Stormwater improvements
- Hydraulics improvements
- Groundwater improvements
- Stormwater improvements
- Hydraulics improvements
- Groundwater improvements

PHASE 1A.2

- Stormwater improvements
- Hydraulics improvements
- Groundwater improvements
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- Groundwater improvements

PHASE 1A.3

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Phase 1 – Sequence B

1. Clear the HART site and area southeast of new stadium to create a construction zone for mixed-use development.
2. Provide pedestrian protection along temporary pedestrian routes from the HART station and the parking lots to the new stadium.
3. Provide temporary bus terminal and connection to HART station to be constructed in the HART parcel.
4. Demolish existing parking on the west side of stadium.
5. Construct new bus terminal, two levels of retail, parking structure, residential and hotel towers.
6. Optional – construct pedestrian bridges from the HART parcel to the Halawa Parcel.
7. Construct pedestrian bridge over Salt Lake Blvd from the HART parcel to the Hālawa Parcel.
8. Construct partial below grade parking structure and buildings surrounding the South Mauka Gate of the new stadium.
9. Expansion of stadium program on mauka side of stadium, adding two restaurant / clubs and roof top terraces.
10. Relocate existing Volcano sculpture.
11. Optional – construct pedestrian bridge over the outer ring road to facilitate pedestrian crossing from parking lot to new stadium without mixing with incoming traffic.

Phase 1B refers to the initial tranche of Mixed-Use Development.
Phase 2

(Note: Phase 2 likely to be done in smaller sub-phases or individual buildings)

1) Done sequentially for each section of the circular parking lot:
   a. Clear the site to create a construction zone for the mixed-use development.
   b. Provide pedestrian protection along pedestrian routes from the parking lot to the new stadium.
   c. Remove existing curb and gutter and asphalt parking for future green space.
   d. Construct new parking structure, retail, office and/or residential buildings.

2) Repeat for each group of buildings (parking, retail, office, residential) around the new circular park.

3) Construct new pedestrian bridge across H201.

4) Expand, patch and repair the outer ring road.

5) Remove stadium entry gate 2.

Phase 3

(Note: Phase 3 likely to be done in smaller sub-phases or individual buildings)

1) Create new grid of roads through the North and South Hālawa parking lots. This includes the replacement of two bridges across Hālawa Stream.

2) Done sequentially for each newly created parcel or “city block”:
   a. Clear the site to create a construction zone for mixed-use development.
   b. Provide pedestrian protection along pedestrian routes from the parking lot to the new stadium.
   c. Remove existing curb and gutter and asphalt parking for future green space.
   d. Construct new parking structure, retail, office and/or residential buildings.

3) Repeat for each group of buildings (parking, retail, office, residential) in phase 3.

4) Remove stadium entry gate 3 and stadium entry gate 4.

Phase 3

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3) Repeat for each group of buildings (parking, retail, office, residential) in phase 3.

4) Remove stadium entry gate 3 and stadium entry gate 4.
open green lawns as extensions of the lanais are created for excellent views during amphitheater events. The large plaza to the North of the amphitheater was also created to connect directly to the stadium plaza and amphitheater. This was a response to looking at the entire masterplan and having the lowest points in the outdoor mall experience. Both sides of this pathway are garages are treated with wood screens and foliage coverings to conceal the inner nature of the garages and give a natural exterior presence. The parking garages front the outer ring places along the arc. Contracting to create tighter, more exclusive way to navigate through the complex. Moving to the end of the interstitial pathway at the Volcano plaza along the south edge at the bridge and the one area where this does happen is at the grand staircase, due to accessibility to the largest parking garage. Where these all converge, there are connections and pathways to allow people to meander along this arc and through the gallery space, there are overhead shading overpasses at various levels. These units are all interconnected through a raised pathway acting as a bridge that makes this community better connected and allows residents an indoor/outdoor walking space covered from the elements. This is the bridge that has been called the HI-Line. This connects all 3 phases of the masterplan. Where these all converge, there are connections and pathways to allow travel in any direction and to any destination within NASED.

SITE MIXED-USE PROGRAM

Phase 3

Future Development of the PMP brings the retail, office and residential to the south end of Phase 3. There is a response to looking at the entire masterplan and how the various levels and buildings in height follow these curves. The parking garages front the outer ring places along the arc. Contracting to create tighter, more exclusive way to navigate through the complex. Moving to the end of the interstitial pathway at the Volcano plaza along the south edge at the bridge and the one area where this does happen is at the grand staircase, due to accessibility to the largest parking garage. Where these all converge, there are connections and pathways to allow people to meander along this arc and through the gallery space, there are overhead shading overpasses at various levels. These units are all interconnected through a raised pathway acting as a bridge that makes this community better connected and allows residents an indoor/outdoor walking space covered from the elements. This is the bridge that has been called the HI-Line. This connects all 3 phases of the masterplan. Where these all converge, there are connections and pathways to allow travel in any direction and to any destination within NASED.

Phase 2

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Phase 1

Future Development of the PMP brings the retail, office and residential to the south end of Phase 3. There is a response to looking at the entire masterplan and how the various levels and buildings in height follow these curves. The parking garages front the outer ring places along the arc. Contracting to create tighter, more exclusive way to navigate through the complex. Moving to the end of the interstitial pathway at the Volcano plaza along the south edge at the bridge and the one area where this does happen is at the grand staircase, due to accessibility to the largest parking garage. Where these all converge, there are connections and pathways to allow travel in any direction and to any destination within NASED.
the entire mall can be closed off during gamedays through transitioning into the lo'i space, it should be noted that the retractable bollards still allow for site circulation. The roundabout node has plazas on every side and is intended to be an active pedestrian experience with pathways. Looking at this node from the main entrance above, you can see that there are driving lanes, bicycle lanes, parallel parking stalls, and ample seating, water features, and landscaped berms and pathways. The cultural center that the HI-Line lands upon, is located in the center of the site and wraps around the field reflected in the form and engages with the landscape below. It also winds its way across the stream and lands at a plaza, making an effective connection for pedestrians to utilize for moving between all three phases.

Because this is also a curb less living street with hardscape paving, this effectively removes the need for gutters and diverts all of the street water collected down the sloped road. There is another pedestrian bridge at the north end of the site, there are driving lanes, bicycle lanes, parallel parking stalls, and a residential complex with three residential towers. Two office buildings above it. The four levels of office spaces are retail, entertainment, and restaurant spaces. This creates a desirable place for stadium goers and residents to come to at the ending point of the HI-Line. The landscape along the street is reflected in the form and engages with the landscape below. This bridge takes off from the volcano plaza and lands on phase 2, a hotel is to the left and one right. From there an office building above it. The four levels of office spaces are retail, entertainment, and restaurant spaces. The HI-Line weaves above and lands on level 4 of the parking garage. In a flowing manner, the HI-Line weaves over another road and bring pedestrians to level 4 of the building closer to the site, around the new stadium, to the Eastern edge of the site, around the new stadium, to the Eastern edge of the site. There is another pedestrian bridge at the north end of the site and the Lower Hālawa Lot. The proposed grading will allow for adequate clearance beneath a gently sloping pedestrian bridge connecting the HART site and new site. Site grading to ensure efficient site drainage into Hālawa Creek and buildings will avoid basement excavation. The existing stadium’s field level is at +20’ and the surrounding parking lots are between +27’ near the volcano plaza and +52’ at the perimeter. The new stadium site, north loading dock, P1.3 and P1.5 will be excavated down to level to be excavated to accommodate the new parking demands. Parking structure P3.1 is situated at the site’s lower Hālawa Lot at +20’. Level cars in at both major grade levels, +50’ and +20’.
Phase 1A & 1B Site Grading Analysis

The conceptual design of the NASED seeks to establish the Field/Event Level of the new facility to be equal with the Field/Event Level of the existing facility. Once the existing facility is demolished, the Field Level of the proposed amphitheater will match the Field/Event Level of the new stadium. The Field/Event Level of the new facility will be elevated by the amount of the new stadium excavation. This elevated site will be used to fill the depression left by the existing stadium, and the fill will be sculpted into the form of the amphitheater.

The concourse level of the new stadium will be at the same grade as the surrounding site in order to create an integrated connection between the stadium and surrounding development. Additionally, by moving the new stadium to the west/makai of the existing stadium, the site topography allows for the potential to create a minimally-sloped land bridge across Salt Lake Boulevard and into the new facility.

The process of excavation and storage of excavated fill on-site will require dust mitigation and planning to ensure the adjacent residential neighborhoods are not covered in construction dust.

Phase 2 and 3 Proposed Site Grading Analysis

The full buildout of the NASED will require new parking structures to accommodate parking for the new site functions as well as providing the required parking needed for events at the stadium. Parking garages are envisioned to be arranged in a semi-circle pattern on the eastern/makai side of the ring road. Structured parking ramps will have one level of parking below grade for secure residential parking, at-grade parking for retail, and elevated parking to replace the stadium parking lost during construction.

The site slopes down towards Hālawa Stream, which is the lowest part of the NASED site, so there will need to be minimal excavation on the southern portions of the site. Structured parking and the rest of the mixed-use development will need to be built 'up' rather than 'down' on the southern portions of the site to avoid the water table and proximity to Hālawa Stream.
ZONING

The Hālawa TOD Plan outlined building height and density restrictions based on specified zoning districts. The intent of the TOD plan is that future developer teams would comply with the applicable district standards. If developers wished to seek additional height or density, they must apply for a TOD Special District Permit or a Planned Development Transit Permit. To achieve height or density bonuses, the landowner must provide community benefits such as affordable housing, open space/parks, right-of-way improvements to existing community amenities, or enhancements of pedestrian and multimodal transportation.

The NASED PMP is intended to compliment and build upon the principles of the Hālawa TOD Plan. Building heights and massing would be determined by the proximity to the HART rail transit station and the nearby airport. The largest and tallest buildings are located closer to Salt Lake Boulevard, and decrease in density as they approach the residential areas adjacent to the development.

The HART rail station is expected to be a significant asset and booster to the vitality of the area. The NASED PMP encourages the integration of the TOD principles and the formation of a strong and vibrant urban center.

Building heights and massing become less intense the further one gets from the Aloha Stadium HART Station. The largest and tallest buildings are located closer to Salt Lake Boulevard, and step down in density the closer they get to the residential areas adjacent to the development.
**District Maximum Allowable Heights**

The NASED PMP diagram shows the District Maximum Allowable Heigths with key features including community benefits, TOD zones, and heights limitations. The NASED PMP substantially reduces the allowable height on the mauka side of Salt Lake Boulevard across the street from the residential neighborhoods. Previously, the Hālawa TOD allowed 150’ of maximum building height, but the NASED team is proposing a reduction to 90’ for the area closest to the single-family houses. To help reduce the height and density of the development with immediate adjacency to housing, the NASED PMP proposes a higher allowable height than the TOD plan along the eastern/mauka side of the existing stadium. The case for increased height to the east of the existing stadium is the presence of the highway interchange to the east. Higher buildings and density would provide a 'shield' and assist with the overall sense of place within the NASED by providing a buffer for the development from traffic noise and activity.

**Building Type Standards**

The architectural guidelines of the New Aloha Stadium Entertainment District are designed to create a unique and cohesive development that is visually appealing and functionally efficient. The guidelines outline standards for building types, architectural features, and materials to ensure a consistent and high-quality aesthetic throughout the project. The building types are categorized into residential, retail, office, hotel, and structured parking, each with specific design requirements to maintain a cohesive appearance.

**Architectural Guidelines**

The architectural guidelines aim to create a unique and cohesive development that is visually appealing and functionally efficient. The guidelines outline standards for building types, architectural features, and materials to ensure a consistent and high-quality aesthetic throughout the project. The building types are categorized into residential, retail, office, hotel, and structured parking, each with specific design requirements to maintain a cohesive appearance.
Amenity Deck features for residents shall include, but not be limited to: pools, cabanas, patio furniture, seating, fire pits, canopies, grills, playgrounds, community gardens, and pavilions.

The amenity deck for each tower shall be a prominent feature in the garage that is visible and easily found.

High-rise buildings will utilize a double loaded corridor to maximize rentable SF and minimize the circulation SF prominent features.

The primary entrance may stand out in relation to the surrounding context by using covered projections or covered recesses into the structure that provide an experience sheltered from the outside elements.

Railings shall be composed of transparent glazing, not steel post railings.

Railings shall not be suspended via tension members that obstruct views.

Amenity decks may be shared between multiple towers.

Each tower will have their respective entrance at the amenity deck level, other areas to serve food/beverages may be included in common amenity decks.

In buildings, at the amenity deck level, other areas to serve food/beverages may be included in common amenity decks.

Exposed floor slabs will create a repetitive element that gives human scale and breaks down the mass that the central core can be accessed.

Exposed floor slabs will create a repetitive element that gives human scale and breaks down the mass that the central core can be accessed.

Distinctive colors: (concrete, glass, white paint, metal panel)

Colors/materials should not absorb heat, but reflect the mullion amounts and widths while also extending the fenestration.

The frontage may either be open to a public gathering plaza or down a smaller walkway depending on the site.

The entryway must be connected to a lobby that leads pedestrians from the street to either a sidewalk or open hardscape space that terminates at the covered entryway.

Separate exits for each tower shall be provided with a minimum of one egress path.

Lobby / Entryway:
- Each unit will be provided with a minimum of one entrance space.
- Building entrance shall be accessible.
- Segmented facades with glass panels can be provided on building legs that get positive views from ground level.
- Buildings shall be enveloped with transparent glazing on ground level.
- Buildings shall not be suspended via tension members or equipment.
- Buildings shall capture the connective method and materials for use in towel and accessed over the building entrance.

Residential High Rise

The program of the tower will create a hidden through terrace or exterior.

Exterior or projections shall be long to break the rhythm of the mass.

Continuous elements creating multiple views shall be used for slow or continuous.

Exposed façades shall use a configuration where glass panels within the façade allow the areas to be used for shading or open landscape space/thresholds so the structure is not concealed.

The façade was a step up from a gardened gathering place, and thus the diagonal of the diagonal or its addition was an opportunity.

Composition of the façade to create a hidden through terrace or exterior.

Exterior or projections shall be long to break the rhythm of the mass.

Continuous elements creating multiple views shall be used for slow or continuous.

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Residential Mid Rise

Description:

Amenity Deck

- Amenity decks can be provided for maximum usage in a garden plant environment.
- The decks can be used to access the surrounding areas or serve as an outdoor living space.

Architectural Character

- Articulations of facade projections and indentations shall be used for balconies.
- Railings shall be composed of transparent glazing and not steel post railings where views are unobstructed.

Fenestration

- Fenestration shall be provided for views.
- Glazing within the fenestration may change colors, light is received with minimal heat gain, maximizing the sustainability initiatives of the masterplan.

Landscape

- Landscaping will be provided for views and circulation.
- Location along the exterior of the project shall be included in various amenity decks.

Equipment

- Equipment shall be provided for mechanical/electrical/communication purposes.
- Locations with glazing that do not have balconies shall be provided for mechanical/electrical/communication purposes.

Building Massing

- The mid rise residential building is intermediate in height between the low rise and high rise. Mid rise buildings are typically as tall as the street is wide. These structures are composed of various configurations of units that range from one room to a few rooms and are provided with vertical access by elevators.

Building Entry

- There shall be one entrance into the tower from the ground level and one entrance from inside the garage at the residential parking level.
- The rear and side entrances shall not be directly under the building.

Lobby / Balcony

- Each unit shall be provided with a minimum of one outdoor space.
- Balconies must be occupiable.
- Railings shall be composed of transparent glazing and not steel post railings where views are unobstructed.

Roofing

- The massing roofs shall be flat with areas for green roofs or PV panels.
- Rainscreen / Vegetation shall be included in various amenity decks.

Materials / Color

- Materials should be durable and anti-corrosive.
- Colors/materials should not absorb heat, but reflect light to create a lighter pale.

Building Articulations

- Articulations of the facade will create a rhythm into the building.
- The articulations shall reveal how the parts fit into the whole by emphasizing each part separately.

Building details

- Although decks can be provided, it is not certain whether the deck shall be provided.
- The decks can be used to access the surrounding areas or serve as an outdoor living space.

Building Performance

- Buildings shall be four stories to seven stories in height.
- Floor to floor heights at most floors shall be approximately 9'-6".
- Amenities decks shall be approximately 15'-0".
- Penthouse shall be approximately 12'-0".

PV equipment for sustainability initiatives shall be located on unoccupied roof decks.

Building Size

- The frontage may either be open to a public gathering plaza or down a smaller walkway depending on the location of the site the building is situated in.
- If not on a podium, there may be an elevated deck for residents’ circulation between units.
- While not directly under the building, retail spaces may be included in the base of the structure if public.

Arts/Entertainment Details

- Admissions to the decks shall be a different entrance than the entrance to the building.

Conclusion

- Conclusion shall refer to the ownership and control of the building.
- Materials should be durable and anti-corrosive.
- Building size shall refer to the square footage of the building.
- Building size shall not exceed the building size.

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Railings shall be composed of transparent glazing where views are unobstructed.

Massing should help to create different front and rear views. These views may be references to other forms that can be horizontally or vertically connected.

Residential Low Rise

DESCRIPTION

Low rise residential buildings are configured as a series of buildings typically three to seven levels in height. Low rise buildings are generally located between the street and the edge of the site. Low rise buildings typically have ground level doors and their primary interior configuration is a few stories in height. Massing shall terminate at grade and shall cut into the ground. The articulation of the massing shall be consistent with the programmatic master plan.

PROGRAMMATIC FEATURES

Entry

• If ground level units are utilized, a clearly visible and shared entrance should be accessible from the sidewalk by a defined outdoor space.

• There shall be a shared interior entrance common access stair and elevator to units within the building at grade.

• Units shall contain an entry through a shared interior corridor, central core, or ground level doors.

• Lobby, garage, and shared space for entry as needed.

Frontage

• The program entrance should be in relation to the remaining entry, where the entry can be visually integrate the buildings. These entries shall be designed to relate to different sizes and massing.

• A common landing area where multiple unit entrances open on to is used, it should be designed to be visible from pedestrian tours and not more than 10 feet.

• Entrance shall be provided for by doors and windows.

• Glazing within the entrance must change colors, form, and proportions depending on the location.

• Glazing shall maintain light transmittance while limiting heat gain.

• Lighting shall be provided with settings for minimum or maximum light levels.

• Roofing may be provided with yellow or green material to capture light.

• The massing roofs shall be flat with areas for green screening. The articulations shall reveal how the parts fit into the whole by emphasizing each part separately.

Architectural Character

• Fenestration shall be situated within the facade in a way that does not allow for direct views into units from other locations nearby.

• Fenestration shall be provided for activity, space, shade, ventilation, children’s play, appearance, and function.

• The articulations shall blend into the overall design.

• The articulations shall reveal how the parts fit into the whole by emphasizing each part separately. The building roofs shall be a common thread.

• Glazed mechanical/electrical/communication shafts shall be used to frame the massing.

• The articulations may be separated through recesses, reveals, or covered recesses into the structure that provide an expression of the building’s tectonics.

• Each unit shall be provided with a common exit/entrance to the parking.

• Articulations will be provided with a minimum of two units per floor.

• Articulations will be provided with a minimum of one unit per floor.

• Articulations are separated to maintain the sustainability initiatives of the masterplan.

• Vegetable and planters shall be used as a common thread.

• The reference to grade change shall be maintained by the massing buildings or exposure of buildings at grade.

• The articulations shall be designed to relate to the remaining entry, where the entrance can be visually integrate the buildings. These entries shall be designed to be visible from pedestrian tours and not more than 10 feet.

• Glazing within the entrance must change colors, form, and proportions depending on the location.

• Glazing shall maintain light transmittance while limiting heat gain, maximizing light is received with minimal heat gain, maximizing light is received with minimal heat gain.

• The articulations shall reveal how the parts fit into the whole by emphasizing each part separately.

Building Massing

• Buildings shall express the construction method and materials in a way to reveal and not conceal the buildings tectonics.

• Building massing shall be two stories in height and may not include elevators. Low rise buildings typically contain two stories in height and may not include elevators.

• Relationship to grade change shall be maintained by the massing buildings or exposure of buildings at grade.

• Parking shall be integrated within the building or within accessible walking distance.

• Buildings shall align with neighboring patterns.

• Buildings shall be composed of transparent glazing where views are unobstructed.

• Railings shall be composed of transparent glazing where views are unobstructed.

• Railings shall be composed of transparent glazing where views are unobstructed.
Retail / Entertainment

- Retail spaces will utilize single and double level entrances. Retailers on an adjacent mid-block level for the
- Floor-to-ceiling height will be used for visual flow and movement in the ground floor space.
- Structural elements shall be coordinated to enhance the retail space's context.
- These shall be located in the building in the form of columns and structural members shall be used to define the height and sightlines for the ground floor building.
- Buildings shall include outdoor walkways, patios, vegetation, planters, outdoor seating, and experiential landscape elements.
- Protrusions and the reversal shall be coordinated to create a rhythm within the facade.
- Ornamentation shall only be used if they are functional elements contributing to building performance, views, or aiding the definition of implicit architectural character.
- Visual transparency should be maximized along the storefront.
- Visual transparency should be maximized along the storefront. This will ensure ample light is received with minimal heat gain, maximizing the larger retail spaces.
- Glazing shall maximize light transmittance while remaining at a low emissivity. This will ensure ample light is received with minimal heat gain, maximizing the larger retail spaces.
- Frontage should be articulated in a way that varies materials, colors, windows, entrances, canopies, and patios.
- Protrusions and the reversal shall be coordinated to create a rhythm within the facade.
- Ornamentation shall only be used if they are functional elements contributing to building performance, views, or aiding the definition of implicit architectural character.

Patio
- The mass shall closely tie into the concept of the retail frontage.
- The storefront adjacent to pedestrian traffic should use a maximum fenestration amount of 40%.
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OFFICE LOW-RISE AND MID-RISE

DESCRIPTION

Fenestration

- Equipment mechanical facilities communications equipment is needed at various points in the structure.
- Glazing within the fenestration may change colors and tints, and glazing within the fenestration may change colors and tints depending on the location and time of day.
- Operable shades may be needed for increased privacy.
- Acoustic criteria shall be included in the design.
- A variety of glazing shall be incorporated.
- The building shall be a reconfigurable open floor plan.
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- A variety of glazing shall be incorporated.

Architectural Character

- Office buildings will utilize an outdoor corridor if permitted.
- Buildings shall express the construction method and materials in a way to reveal and not conceal the building’s tectonics.
- Large massing gestures should be carried through the respective phase it is located in through representing a distinctive form.
- The massing roofs shall be flat with areas for green roofs or PV panels.
- The maximum window to wall ratio should be used.
- The primary entrance may stand out in relation to the building and other surroundings buildings of similar scale.
- Large massing gestures should be carried through the respective phase it is located in through representing a distinctive form.

Rooftop Views

- Each mass shall have an established view of potential to maximize views.
- The rooftop shall appear as a continuous facade and maintain a visual connection to the buildings below.
- The masses shall closely tie into the concept of the composition.
- The mass shall strive to communicate with the surrounding landscape.
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- The masses shall closely tie into the concept of the composition.
- The mass shall strive to communicate with the surrounding landscape.

Rooftop Amenities

- The rooftop may either be open to a public gathering place or closed and secluded depending on the location of the site the building is situated in.
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Materials / Color

- Distinctive colors: concrete, glass, white paint, metal surfaces.
- Materials should reveal their true nature.
- Materials should be durable and anti-corrosive.
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- Materials should be durable and anti-corrosive.

Articulations / Details

- Articulations of the facade will create a rhythm through symmetry or asymmetry.
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Frontage

- The primary entrance shall be clearly visible from the exterior at the lowest level of the office.
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Convey

- Canopy conditions may be created by extending floor slabs at the perimeter to create covered conditions below for sheltering.
- Amenity decks or common areas shared by the office per building either indoors or outdoors if permitted.
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Environment

- Tinted, etched, and textured external surfaces may be weather- resistant, durable, and aesthetically pleasing.
- Canopy conditions may be created by extending floor slabs at the perimeter to create covered conditions below for sheltering.
- Amenity decks or common areas shared by the office per building either indoors or outdoors if permitted.
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Hotel

Description

The hotel building is a statement providing clear identity and accommodation for guests. Each building contains unique configurations at various stages in the design.

Fenestration

- Massing in close proximity must communicate and use materials that closely tie into the concept of the structure.
- Distinctive colors: (concrete, glass, white paint, metal)
- Entrances to buildings from the amenity deck shall be through the garage at the parking level.
- PV equipment for sustainability initiatives shall be located at the rear of the building.
- Distinctive features: (concrete, glass, white paint, metal)
- The amenity deck architecture may blend into the building massing.

Architectural Elements

- The amenity deck may be shared between multiple buildings of hotel or residential occupancy.
- Large open gathering areas, as well as open private outdoor spaces with seating shall be provided.
- Large outdoor mechanical/structural elements shall be located at the rear of the building.
- PV equipment for sustainability initiatives shall be located at the rear of the building.

PREDOMINANT FEATURES

- The amenity deck may be shared between multiple buildings of hotel or residential occupancy.
- The amenity deck architecture may blend into the building massing.

Entry

- The primary entrance may stand out in relation to the surrounding context by using covered projections or covered recesses into the structure that provide an experience sheltered from the outside elements.
- Primary entrance doors shall be located in an area facing green space, a plaza, or the street.
- The primary entrance doors shall be located in an area facing green space, a plaza, or the street.
- The area located directly in front of the street level entrance shall be primarily open and expansive.

Building Massing

- The top of the massing may contain less indoor SF and more usable outdoor space.
- Distinctive features: (concrete, glass, white paint, metal)
- The massing roofs shall be flat with areas for green roofs or PV panels.
- The mass shall closely tie into the concept of the structure.
- If multiple buildings are built atop the same garage, the garages entrance should be aligned with the central core and provide access to all building floors. It will be a prominent feature in the garage that is visible and reachable.

Paved Walkways

- Paved walkways shall be used minimally as accents.
- Colors/materials should not absorb heat, but reflect a lighter pale/castte.
- Distinctive colors: (concrete, glass, white paint, metal)

Amenity Deck

- The area located directly in front of the street level entrance shall be primarily open and expansive.
- The area located directly in front of the street level entrance shall be primarily open and expansive.
- Amenity decks may be shared between multiple buildings of hotel or residential occupancy.
- The amenity deck architecture may blend into the building massing.
- The area located directly in front of the street level entrance shall be primarily open and expansive.
- Some features will include pools, cabanas, parking, barbeques, tennis courts, gym, exercise, playgrounds, community gardens, plazas, kiosks, and playgrounds.
- Details and ornamentation shall only be used if they complement the overall building composition.
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PARKING GARAGE

DESCRIPTION
Floor to floor heights will be 18'-0" on ground level and 9'-0" for each proceeding parking level. Above-ground parking garage structures will be used to provide adequate parking for the site’s programmatic needs. Parking needs and volume will vary depending on the site’s location, adjacent buildings, and schedules, and seasonal event peak uses.

PREDOMINANT FEATURES
- Buildings shall remain level whenever possible to allow for potential future needs. Installing buildings which are utilized for multiple buildings of level or contextual use.
- A division such as lockable, secure, and transparent car parking deck.
- The deck cannot be accessible to the general public.
- Landscaping and pedestrian scale, non-truck, and non-truck carrying.
- Entry features shall include steps, columns, pedestrian ramps, taxiway, common to the pedestrian scale.
- Landscaping with areas for vegetation, trees, and grass lawns must be incorporated.
- These features will include paths, columns, pedestrian ramps, taxiway, common to the pedestrian scale.
- Landscaping and pedestrian scale.

ENTRY
- Parking may be utilized as a buffer to natural decks.
- Parking access at an adequate angle will be maintained.
- Tactile elements or elements shall be maintained.
- Parking structure shall remain open-air and naturally ventilated with some form of architectural screening.

Fenestration
- Overall dimensions and structural grid spacing will be determined by parking needs and modules.
- Floor to floor heights will be 18'-0" on ground level and 9'-0" for each proceeding parking level.
- Buildings shall be balanced. This includes standard garage.

Articulations / Details
- The amenity deck architecture must blend into the overall massing of the building.
- Areas to serve food/beverages may be included in certain amenity decks.
- The amenity deck architecture.
- Building attendant or automatic gate will be included.
- Equipment for sustainability initiatives shall be located on unoccupied roof decks.

Materials / Color
- Materials used in each building should create a pale/tint that blends in with other surrounding structures. High quality durable materials shall be used.
- The amenity deck architecture.
- Some features will include pools, cabanas, patio furniture, seating, fire pits, canopies, grills, playgrounds, community gardens, playgrounds, and pavilions.

SITE GUIDELINES
- The site of the New Aloha Stadium Entertainment District builds on the existing master plan for which it is designed. The stadium lot is naturally sloped down toward the stream and has a rich history through military and Hawaiian presence. The three main phases composing this site all work together, contributing to the success of this project. Within each of these phases are a variety of different site conditions that have been closely studied in order to create the site plan, such as the orientation, landscape, topography, views and open spaces, which complement the underlying structure and are influenced by the existing topography.

These guidelines intend to set a minimum level of quality which will be able to evolve and change according to the success of the convergence between landscape and architecture.

Building height will be limited to 5 levels to limit disruption to the pedestrian scale.
**Pedestrian and Bike Pathways**

**Description:** Pedestrian pathways should consider a wide range of physical features and facilitate pedestrian circulation. These pathways should complement the needs and desires of all users. The area should be designed to enhance the pedestrian experience and encourage the use of sidewalks, crosswalks, and pedestrian bridges. Pedestrian bridges are used throughout the site to provide critical links in the bicycle/pedestrian system to join pedestrian circulation systems outside the site, providing opportunities to connect with the surrounding community.

**Principles of Pedestrian Design:**
- **Inclusiveness:** Ensure ease of access through the use of public art, street furniture, signatures, and walkway elements.
- **Place public safety in a top priority:** Ensure safety and comfort in an interconnected multi-user network.
- **The pedestrian network should provide a continuous route:** The pedestrian routes should be clear of potential obstacles and provide a safe and comfortable environment for pedestrians.

**Subsections:**
- **Access:** Provide a direct connection to the new streets and use new streets.
- **Cross paths access:** On the A4th Avenue.
- **Cross pedestrian crossings on surrounding streets:** Ensure pedestrian crossings are at cross intersections.
- **Connect access to the Harbor Bayside walkway:** Ensure accessible bicycle/pedestrian paths share the same path.
- **Drive or connection over live streets:** Drive or connection over live streets.

**Subsections:**
- **Entry:** If parking is provided, the bike lane should be located on the side of the road on the outer edge of the road.
- **Intersection crossing:** If parking is provided, the bike lane should be located on the side of the road on the outer edge of the road.
- **Crossing pedestrian crossings:** Ensure pedestrian crossings are at cross intersections.
- **Staging areas at path entrances:** Include staging areas at path entrances.
- **Entry and exit widths:** Based on the type, volume, and dominant direction of traffic flow.

**Characteristics:**
- **Orientation:** If parking is provided, the bike lane should be located on the side of the road on the outer edge of the road.
- **Intersection crossing:** If parking is provided, the bike lane should be located on the side of the road on the outer edge of the road.
- **Colored bicycle lanes:** Colored bicycle lanes should be considered.
- **Bike racks:** Bike racks should be provided for major entrances and exits from pathways.
- **Signs:** Signage is an important tool in pedestrian circulation systems.
- **Entry and exit points:** Each entrance and exit point to the network should be clearly marked with signs.

**Materials / Color:**
- **Materials should be durable and anti-corrosive:** Materials should be durable and anti-corrosive.
- **The color shall reflect the respective phases and design:** Materials should reflect the respective phases and design.

**Pedestrian Bridges:**
- **Entrances:** Entrances shall seamlessly blend into the landscape/hardscape.
- **Landings:** Landings should expand and react through materiality.
- **Entry and exit points:** Site entrances and exit points in highly trafficked areas, or plaza spaces.
- **Railing designs:** Appropriate railing designs include wire, cable mesh, glass, wood, balusters, and tree canopies.

**Pedestrian Bridges (cont.)**
- **The pedestrian network should provide a continuous route:** The pedestrian network should provide a continuous route.
- **Staging areas at path entrances:** Include staging areas at path entrances.
- **Entry and exit widths:** Based on the type, volume, and dominant direction of traffic flow.

**Characteristics:**
- **Orientation:** Orientation is an important tool in pedestrian circulation systems.
- **Entry and exit points:** Each entrance and exit point to the network should be clearly marked with signs.

**Implementation & Installation:**
- **Entry and exit points:** Site entrances and exit points in highly trafficked areas, or plaza spaces.
- **Railing designs:** Appropriate railing designs include wire, cable mesh, glass, wood, balusters, and tree canopies.

**Pedestrian Bridges (cont.)**
- **Staging areas at path entrances:** Include staging areas at path entrances.
- **Entry and exit widths:** Based on the type, volume, and dominant direction of traffic flow.

**Characteristics:**
- **Orientation:** Orientation is an important tool in pedestrian circulation systems.
- **Entry and exit points:** Each entrance and exit point to the network should be clearly marked with signs.
Architectural Character

Materials / Color

There shall be one continuous pathway that circulates pedestrians, which may have smaller secondary pathways stemming from the central path. This pathway can contain a covered condition that shelters pedestrians from the outdoor elements. Railings shall enhance visual transparency and not conceal the tectonics. Spatial barriers may not obscure visibility and use elements of the same design language. The mass shall closely tie into the concept of the respective phase it is located in through representing a distinctive form. Multiple entrances to the same structure shall communicate similar massing techniques. The path shall be accessible from various locations in each public space. Ramps and stairs or escalators should be provided. Articulations / Details

- Entrances shall maintain a minimum of 5’-0”
- Each entrance shall feature unique signage and bottom colors should be provided.
- Signage shall be visible at the park’s main access points and be inscribed with significant words and lettering.
- Niche areas that create engaging pause shall be used in appropriate interiors.

Seating

- Materials should be durable and anti-corrosive.
- Materials should be anti-slip and can use open grating or other glass.
- Native plants are heavily encouraged for the majority of landscaping.
- Trees or vegetation that provides shade from direct sun should be incorporated into the overall design.
- Vegetation and planters as a color/material should be used.
- Site stormwater management elements, such as retention planters, bioswales, or community garden rainwater collection, are encouraged and should be incorporated into the overall design.
- Distinctive colors: (concrete, glass, white paint, metal panels, wood)

- The walkway can contain a covered condition that protects pedestrians from the outdoor elements.
- The color shall reflect the respective phases scheme.
- Color choice shall be made in consultation with the architect of record.
- The path shall be accessible from various locations in each public space.
- A mixture of seating types should be included.
- Examples could include community gardens, water features, large decorative planters, or other landscaped elements.
- Native plants are heavily encouraged for the majority of landscaping.
- Trees or vegetation that provides shade from direct sun should be incorporated into the overall design.
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- A mixture of seating types should be included.
- Examples could include community gardens, water features, large decorative planters, or other landscaped elements.
- Native plants are heavily encouraged for the majority of landscaping.
- Trees or vegetation that provides shade from direct sun should be incorporated into the overall design.
- Vegetation and planters as a color/material should be used.
- Site stormwater management elements, such as retention planters, bioswales, or community garden rainwater collection, are encouraged and should be incorporated into the overall design.
- Distinctive colors: (concrete, glass, white paint, metal panels, wood)
Public Parks

**DESCRIPTION**

In one of the primary outdoor gathering spaces in the site, the plaza serves as the social center for enhancing the functional public open green space complemented by the natural landscape environment. The public parks in the open green space nodes shall not be functional and shall be integrated into the overall community design language. Each different node shall become a mixture of occupiable and ornamental green spaces framed by architectural and ecological forms uniquely representing the respective phase it is located in through representing a distinctive design language.

**Railings and Barriers**

- Park edges and boundaries may be more or less defined than other spaces.
- Railings to be treated similarly, both in form and material.
- Railings shall blend into the railings of any new public amenities.
- Railings shall all be treated similarly.
- Spatial barriers may not obscure visibility or line of sight among pedestrians, cyclists, or retail storefronts.
- Elevated barriers and occupiable zones shall remain as permeable as possible to view corridors, cast excessive shade onto another space underneath, or create unfavorable wind conditions for site occupants.
- Native plants are heavily encouraged for the majority of landscaping.
- Native plants are heavily encouraged for the majority of landscaping.
- Site stormwater management elements, such as retention planters, bioswales, or community garden rainwater collection, are encouraged and shall be incorporated into the overall design language.
- Well designed comfortable seating shall be provided.
- Seating variety should include: movable seating, planter ledges, seating steps.
- Seating wherever allowable.
- Ample public seating shall be provided, especially near significant nodes and intersections.
- Distinctive colors: (concrete, glass, white paint, metal panels, wood)
- Materials should reveal their true nature.
- The color shall reflect the respective phases scheme.
- Every face shall be articulated with material should be used abundantly.
- The relationship between solid vs void members should be avoided near prominent pathways.
- Any obstructions such as seating or structural elements shall not block access with directionality.
- Any architectural element shall not block access to view corridors, cast excessive shade onto another space underneath, or create unfavorable wind conditions for site occupants.
- Any obstruction shall not block access to view corridors, cast excessive shade onto another space underneath, or create unfavorable wind conditions for site occupants.
- Exposed structural members will create a repetitive element that gives human scale and creates boundaries.
- Details and ornamentation shall only be used if they are functional elements, contributing to views, or aiding the definition of implicit boundaries.
- A mixture of seating types should be included.
- Any built infrastructure included should work in concert with the green space and provide an edge for the environmental forms.
- Programs and architectural forms shall feature natural color or otherwise accentuate accommodations included in the design language.

** PRESSURANT FEATURES**

- **Entry**
  - The entrance to the park shall be seamlessly integrated into the surrounding buildings, surfaces, and pedestrian spaces.
  - Park spaces shall serve as gathering nodes within the greater master plan.
  - Park spaces shall serve as gathering nodes within the greater master plan.
  - Dark spaces shall serve as gathering nodes within the greater master plan.
  - Dark spaces shall serve as gathering nodes within the greater master plan.
- **Provision and Entrances**
  - Natural elements shall be induced in each public space.
  - Examples could include community gardens, native forests, large decorative planters, or water features.
  - Native plants are heavily encouraged for the respective phases.
  - Certify that all landscape materials, such as ornamental planters, benches, or community garden: ornamentation, are installed and shall be incorporated into the overall design language.
  - Park spaces shall serve as social nodes and interaction areas.
  - The relationship between solid vs void members should be avoided near prominent pathways.
  - Any obstruction shall not block access.
  - While design, comfort, safety, and accessibility shall be provided.
Architectural Elements

Each park may contain a central condition that provides pedestrianism from the outdoor domains.

• Pathway network should be predictable.

• The overall form of the architectural elements should respond to the landscape and natural alignment of the area.

• The materials must not be complex, but rather defined in small, uniform units or squares. Arrays or columns should not rise in natural topography.

Articulations / Details

• Natural patterns and articulations will reveal differentiated areas and natural and urbanized domains for the site.

• Site lighting shall align with major articulations and be visible from the ground level.

• Landscaping and site lighting should be within a central unifying path system.

• Fixtures should be located and aimed in a way to minimize glare.

• Exposed structural members will create a repetitive experience. With this in mind, a special consideration should be given to how the space and its users (and their needs) may change along the progression of a day or night.

• The relationship between solid vs void or other architectural pathways to limit visual edge breaks or disturbances should not obstruct the path of travel onto another space underneath, or create unfavorable wind conditions for site occupants.

• Lighting assemblies must minimize or eliminate any excessive light spill effect on surrounding buildings, roads, and natural spaces.

Materials / Color

• Each plaza will include a pedestrian Emergency and night time illumination nodes, and design elements.

• Any architectural element shall not block a view of the path, but rather give human scale and create boundaries. Any obstructions such as seating or structural members should be avoided near these landing zones.

• Fixtures should use trims and diffusers to reveal and not conceal the tectonics.

• The programmatic master plan shall coordinate the lighting scheme to align with the spatial geometry and not appear forced.

• Any built infrastructure included should work with the spatial geometry and not appear forced.

• Vegetation and planters as a color/material should be used abundantly.

• Vegetation underplanted with overhead or cove conditions and terminate articulations.

• Any plant cover should be maintained throughout the path that illuminates vegetation or ensign elements.

Lighting and Visibility

The lighting shall be used for the purposes of maximizing pedestrian movement safety, and usable light throughout all hours of dusk or night. All lighting, with 360° coverage, should be used on bridges. Areas shall be either uncontrolled glare areas or areas where controlling glare will enhance the surrounding development.

• Fixtures should be located and aimed in a way to minimize glare.

• The color shall reflect the respective phases scheme.

• V egetation and planters as a color/paint, metal panels, wood) material should be used abundantly.

• The color shall reflect the respective phases scheme.

• The relationship between solid vs void or other architectural pathways to limit visual edge breaks or disturbances should not obstruct the path of travel onto another space underneath, or create unfavorable wind conditions for site occupants.

• Lighting assemblies shall express the construction method and materials in a way to reveal and not conceal the tectonics.

• Fixtures should use trims and diffusers to reveal and not conceal the tectonics.

• The programmatic master plan shall coordinate the lighting scheme to align with the spatial geometry and not appear forced.

• Any built infrastructure included should work with the spatial geometry and not appear forced.

• Vegetation and planters as a color/material should be used abundantly.

• Vegetation underplanted with overhead or cove conditions and terminate articulations.
Signage and Navigation

The specific design of these elements shall be determined at the time of installation based upon the location and type. The designs must be reviewed and approved before installation. In order to maintain consistency, all signage shall comply with the following characteristics.

1) Grand Sign
   - Natural in appearance
   - Materiality shall be durable and anti-corrosive
   - Profiles shall be kept slender to appear transparent from non-viewing angles
   - Foliage and landscaping should be an integral part of the composition
   - Lowering may appear on both sides

2) Wayfinding Signs
   - The purpose of the grand sign is to provide people on the development with the ability to locate what they are close to. This sign shall be highly visible from multiple vantage points and shall be located at prominent intersections. This sign shall be designed to be easily readable from various viewing angles. The following are a few key characteristics:
     - The name of the site (NASED) shall be a common material and typology that creates the NASED signage character.
     - Wayfinding signs for pedestrians should be easily readable from a standard standing height.
     - Materiality shall draw language similar to the architectural design.
     - Typography shall be uncluttered and stylistic.
     - Signage shall incorporate unique design elements to distinguish.
     - Wayfinding signage applies to vehicles and pedestrian walks.

3) Marketing Signs
   - These signs shall incorporate unique design elements to distinguish. The purpose of these signs is to communicate entering that they are now entering the new Aloha Stadium district.
   - Marketing signs shall comply with the following characteristics:
     - Located at the gateway entrance name
     - Designed to be easily readable from a standard standing height.
     - Materiality shall be designed to complement the architectural design.
     - Typography shall be uncluttered and stylistic.
     - Materiality should complement the surrounding context.

4) Streetscape Signs
   - These signs shall incorporate unique design elements to distinguish. The purpose of these signs is to communicate that they are now entering the new Aloha Stadium district.
   - Streetscape signs shall comply with the following characteristics:
     - Located in prominent locations
     - Designed to be easily readable from a standard standing height.
     - Materiality shall be designed to complement the architectural design.
     - Typography shall be uncluttered and stylistic.
     - Materiality should complement the surrounding context.

5) Marketing Sign
   - These signs shall incorporate unique design elements to distinguish. The purpose of these signs is to communicate that they are now entering the new Aloha Stadium district.
   - Marketing signs shall comply with the following characteristics:
     - Located in prominent locations
     - Designed to be easily readable from a standard standing height.
     - Materiality shall be designed to complement the architectural design.
     - Typography shall be uncluttered and stylistic.
     - Materiality should complement the surrounding context.

Prohibited Signs

- Wind driven or portable signs
- Flashing signs
- Aircraft advertisement signs
- Aerial advertisements
- Signs on medians, light poles, trees, or structure right of way
- Signs displaying larger than three stories
- Signs placed on vacant lots
- Billboards

Hawaii has a long history of regulating size and placement of signs to protect the natural beauty of the state. Standards in relation to size, location, motion, illumination, height, and setbacks must be followed.

Wayfinding signage applies to vehicles and pedestrian walks.

Marketing signs shall incorporate unique design elements to distinguish. The purpose of these signs is to communicate entering that they are now entering the new Aloha Stadium district.

Marketing signs shall comply with the following characteristics:

- Located at the gateway entrance name
- Designed to be easily readable from a standard standing height.
- Materiality shall be designed to complement the architectural design.
- Typography shall be uncluttered and stylistic.
New Aloha Stadium Entertainment District

PROGRAMMATIC MASTER PLAN
Appendix A-2:
Viewshed Analysis
VIEW SHED ANALYSIS

The goal of the design of the district is to preserve the value of the overall viewsheds. Because surrounding areas are primarily residential, it is essential the views are not diminished. This can be accomplished through careful planning of building heights and floor-to-ceiling ratios throughout the site. Building massing and site planning should be done in a manner to ensure new construction does not block or diminish existing views of the surrounding area. To accomplish this, the master plan must follow building height and density requirements throughout the site. Building massing and site planning should be done in a manner to ensure new construction does not block or diminish existing views of the surrounding area. There should be locations throughout the site that are designed to emphasize important views surrounding the site. These locations should allow views of the Koolau or Waianae Ranges and gardens that frame the surrounding area. View shed studies are made by the exploration of the surrounding area of the site and identifying where important views exist. Scenics studies are then conducted to identify the development site’s views from the surrounding area. Eight view shed studies were made to examine the impact of the NASED development on the different views from the site. These locations can be seen on the following map.

1. from Rainbow Bay Marina
2. from Aiea Bay State Recreation Area
3. from Aiea Heights Dr near Kihewa Pl
4. from the corner of Poko Rd. and Poko Pl
5. from the corner of Hālawa Heights Rd. and Ulune St
6. from the corner of Kahuapaani St. and Salt Lake Blvd
7. from Ohenana Loop
8. from the corner of Kalaloa St. and Salt Lake Blvd

These locations can be seen on the following map.
Appendix A-3:
Site and Architectural Guidelines
Architectural Guidelines

Building Type Standards

The programmatic master plan of the New Aloha Stadium Entertainment District is made up of an initial first phase and subsequent future phases which should all work together to contribute to the success of this project. Within each of these phases are many building types. The purpose of these architectural guidelines is to point out the various building types, features, character, and massing. These standards intend to describe a minimum level of quality and to assist other programs mentioned in this document.

Residential High Rise

- The garage entrance should be aligned with the central core and provide access to the amenity deck.
- The primary entrance may stand out in relation to the surrounding context by using covered projections or covered recesses into the structure that provide an experience sheltered from the outside elements.
- The area located directly in front of the street level entrance should not be constrained by other site elements and should contain spaces for seating.
- The street level entrance must be the primary entry from ground level and minimum one entrance from each floor to the main amenity deck.
- Railings shall not be suspended via tension members that obstruct views.
- Railings shall be composed of transparent glazing, not steel post railings.
- The screen system must also blend into the architectural character.
- If equipment is attached to the structure it shall blend into the building massing.
- Equipment shall be suspended via extension members that do not obscure views.
- If equipment is attached to the amenity deck it shall blend into the greenroofs features.
- The amenity deck cannot be accessible to the general public.
- Landscaping with areas for vegetation, trees, and grass lawns must be incorporated.
- Larger open gathering areas, as well as more private smaller spaces with seating shall be provided.

Amenity Deck

- Amenities may be shared between multiple owners.
- The primary door may be accessible to the general public.
- The programmatic masterplan of the New Aloha Stadium Entertainment District is made up of an initial first phase and subsequent future phases which should all work together to contribute to the success of this project. Within each of these phases are many building types. The purpose of these architectural guidelines is to point out the various building types, features, character, and massing. These standards intend to describe a minimum level of quality and to assist other programs mentioned in this document.

Fenestration

- Fenestration will be provided by doors and windows.
- Glazing shall be made from clear glass, reflective glass, tinted, and transparent depending on the location and shall maximize the transmittance of sunlight into the building providing shade and cooling, as well as maximizing the energy efficiency of the building.
- Glazing shall minimize views by reducing the visibility of surrounding and visible while also reducing the heat gain.
- There must be operable windows provided in each room to assist with natural ventilation.
- Windows and wall systems that have the ability to provide shade and cooling shall be provided.
- Locations within the building that do not have a balance of natural cooling shall be provided with hundred percent shades that do not exceed a maximum of one hundred percent.

Gallery / Lobby

- Every floor shall be provided with a minimum of one outdoor space.
- Entrance must be recognizable.
- Multiple (multiple story high) recessed eaves can be provided including those that provide room for eaves and are constructed from materials that do not obstruct views.
- Railings shall be composed of transparent glazing, not steel post railings.
- Railings shall be suspended via extension members that do not obscure views.
- Railings shall be composed of transparent glazing, not steel post railings.
- The amenity deck cannot be accessible to the general public.
- Landscaping with areas for vegetation, trees, and grass lawns must be incorporated.
- Larger open gathering areas, as well as more private smaller spaces with seating shall be provided.

Entry

- Entryways must be connected to a lobby that contains vertical circulation leading occupants to their respective floor or to the main amenity deck where the central core can be accessed.
- The street level entrance must be the primary entry from ground level and minimum one entrance from each floor to the main amenity deck.
- Railings shall not be suspended via tension members that obstruct views.
- Railings shall be composed of transparent glazing, not steel post railings.
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- Glazing shall minimize views by reducing the visibility of surrounding and visible while also reducing the heat gain.
- There must be operable windows provided in each room to assist with natural ventilation.
- Windows and wall systems that have the ability to provide shade and cooling shall be provided.
- Locations within the building that do not have a balance of natural cooling shall be provided with hundred percent shades that do not exceed a maximum of one hundred percent.
PV equipment for sustainability initiatives shall be located as required and in line with:

- **Architectural Elements**
  - High rises must be of a double loaded corridor to accommodate entrance and exit for the building.
  - There shall be a public entrance and exit points located below grade.
  - Buildings shall respect the surrounding context.
  - Buildings shall represent the surrounding context and materials.
  - PV equipment for sustainability initiatives shall be located on unoccupied roof decks.

- **Building Massing**
  - High rise buildings shall have straightforward elevations to reflect the primary entrance.
  - Floors in high rises shall conform to an open standard floor plan.
  - Columns or projections shall not exceed 1'.

- **Fenestration**
  - Materials should reflect the surrounding context and materials.
  - Glazing shall maximize light transmission while minimizing heat gain, maximizing the sustainability initiatives of the masterplan.

- **Amenity Decks**
  - These can be dispersed throughout the high rise section.
  - If equipment is attached to the structure, it shall blend into the building massing.

- **Entry**
  - There shall be one entrance into the tower from ground level and one entrance from inside the garage, and the street level entrance must be the primary entry.
  - Railings shall not be suspended via tension members above providing shade.

- **Residential Mid Rise**
  - The top of the building may contain less indoor SF and more usable outdoor space.
  - The mass shall closely tie into the concept of the architectural character.
  - Residential towers should be located and oriented to take advantage of views to the mountains or the ocean.

- **Podium Construction**
  - These buildings will use podium construction, otherwise known as pedestal or platform construction.
  - Landscaping with areas for vegetation, trees, and grass must be incorporated.
  - Each building will have its respective entrance at ground level and at garage level.

- **Larger Open Gathering Areas**
  - Some features for residents will include pools, cabanas, patio furniture, seating, fire pits, canopies, grills, playgrounds, community gardens, and pavilions.

- **Materials Should Be Durable and Anti-Corrosive**
  - Materials should reflect local vernacular and reveal their true nature.
  - Distinctive colors: (concrete, glass, white paint, metal, and wood). 
  - These can be dispersed throughout the high rise section.

- **Entry**
  - There shall be one entrance into the tower from ground level and one entrance from inside the garage, and the street level entrance must be the primary entry.

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  - These can be dispersed throughout the high rise section.

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  - Each building will have its respective entrance at ground level and at garage level.

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  - Some features for residents will include pools, cabanas, patio furniture, seating, fire pits, canopies, grills, playgrounds, community gardens, and pavilions.

- **Materials Should Be Durable and Anti-Corrosive**
  - Materials should reflect local vernacular and reveal their true nature.
  - Distinctive colors: (concrete, glass, white paint, metal, and wood). 
  - These can be dispersed throughout the high rise section.
Residential Low Rise

**DESCRIPTION**

- These are residential buildings comprising the lowest height category in the design guidelines. A residential building shall be composed of transparent glazing and shall not include any solid vertical elements. The massing shall be expressed through the articulation of various configurations of units that range from one room to a family home. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- The articulation shall reveal how the parts fit into the scheme. The articulations shall be used as a common thread for the building's overall character.

- Vegetable and planters as a color/material shall be used as a common thread. The articulations shall be framed appropriately within the surrounding context by using covered projections or covered recesses into the structure that provide an experience different from the outside environment.

- A generous setback shall be used to provide access. The articulations shall be situated within the exterior and should provide shade to the ground floor units.

- Vegetation and planters as a color/material shall be used as a common thread. The articulations shall reveal how the parts fit into the scheme.

- If equipment is attached to the structure it shall blend into the building massing. If equipment is a part of the structure it shall blend into the building massing.

- Equipment shall not be located in close proximity to the building.

- The entrance should be raised slightly above grade to increase privacy. The area located directly in front of the front door shall be provided with a minimum of one shared indoor or outdoor amenity. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- The area located directly in front of the front door shall be provided with a minimum of one shared indoor or outdoor amenity. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- Each unit shall be provided with a minimum of one shared indoor or outdoor amenity. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- The entrance shall be accessible from the sidewalk by a path or covered projections or covered recesses into the structure that provide an experience different from the outside environment.

- The articulations shall be used as a common thread. The articulations shall be situated within the exterior and should provide shade to the ground floor units.

- Vegetation and planters as a color/material shall be used as a common thread. The articulations shall reveal how the parts fit into the scheme.

- If equipment is attached to the structure it shall blend into the building massing. If equipment is part of the structure it shall blend into the building massing.

- The entrance should be raised slightly above grade to increase privacy. The area located directly in front of the front door shall be provided with a minimum of one shared indoor or outdoor amenity. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- Colors/materials should not absorb heat, but reflect using a lighter pale/te.

- Transitions from the public to private realm through symmetry or asymmetry must be considered. The proportions must be considered.

- Building shall be composed of transparent glazing where views are unobstructed. Buildings in close proximity to other buildings shall be repeated.

- Articulations will be used as a common thread. The articulations shall be situated within the exterior and should provide shade to the ground floor units.

- Each unit shall be provided with a minimum of one shared indoor or outdoor amenity. The entrance should not contain high traffic circulation or provide access to other locations nearby.

- Ornamentation shall only be used if they are functional elements contributing to building function, e.g., adding the definition of an entry.
Massing should help to create different front and rear architectural character.

Retail / Entertainment

Outdoor patio spaces for seating are encouraged.

Retail spaces will utilize single and double level structures.

The top of the massing may contain less indoor SF and more usable outdoor space.

Partial height walls and railings will provide transitions through displays, frontage, art, vegetation, or other possibilities.

First floor canopy/shading element will be used for second floor walkways to minimize circulation footage.

There shall be vertical circulation in the form of elevators and escalators to access the second floor.

If outdoor mechanical/electrical/communication equipment is needed, it must be screened from direct viewing.

All visible sides of the retail space shall be activated through symmetry or asymmetry.

Loading docks, dumpsters, or other supporting spaces shall be located in unnoticeable areas screened from direct viewing.

All walkways shall be covered/sheltered to enhance the pedestrian walking experience.

Landscape transitions shall be used to soften the building edge.

Articulations of the facade will create a rhythm through symmetry or asymmetry.

Visual transparency should be maximized along the street facing facade.

Landscape transitions shall reveal how the parts fit into the whole by emphasizing each part separately.

Facade bays may be separated through recesses, reveals, glazed openings, or other possibilities.

Materials should reflect local vernacular and reveal functional elements contributing to building performance, views, or aiding the definition of implicit boundaries.

Materials should be durable and last centuries.

Facade color shall not absorb heat, but rather enhance the path of circulation.

Safety considerations should be added elements to the path of circulation.

The storefront should enhance the pedestrian experience.

The storefront should not be located in the path of circulation.

The storefront should not block views.

Facade color should reflect the respective phases scheme.

Distinctive colors: (stone, concrete, glass, white paint, metal, slate, redwood, or other possibilities).

Vegetation and planters as a color/material shall be used at a low emissivity. This will ensure ample light is received with minimal heat gain, maximizing the sustainability initiatives of the masterplan.

Fenestration

Moreover, ornamental treatments on windows are encouraged to soften the line between indoors and outdoors.

The distribution of space and the selection and placement of openings shall enhance the aesthetic and functional benefits of the building massing.

Glazing shall maximize light transmission while staying at a low emissivity. This will ensure ample light is received with minimal heat gain, maximizing the sustainability initiatives of the masterplan.

The storefront should enhance the pedestrian experience.

The storefront should not block views.

Framing

The storefront should not be located in the path of circulation.

Framing

Safety considerations should be added elements to the path of circulation.

Framing

Safety considerations should be added elements to the path of circulation.

Framing

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Framing

Safety considerations should be added elements to the path of circulation.
### Office Low-Rise and Mid-Rise

**DESCRIPTION**

The office buildings will reflect a single or multi-tenant structure that can be flexible or one that can expand. A variety of spaces can be included to accommodate small offices for the community, larger spaces for special events, or conference rooms.

**Requirements**

- **Exterior**
  - *Facade*
    - Horizontal shading elements that do not exceed 4’-0” for horizontal elements that do not exceed 4’-0”.
    - The mass shall react to contextual elements if in close proximity to an area with lower/higher heights.
    - Ornamentation shall only be used if they are functional elements contributing to building performance, views, or aiding the definition of implicit boundaries.
    - Columns and structural members should be used to define interior spaces.
    - The corners of second level retail buildings should be articulated in a way that varies materials, colors, windows, entrances, canopies, and patios.
    - Design elements, such as canopies, shall conform to the concept of the programatic master plan.

- **Amenity Deck / Common Area**
  - Entrances to buildings from the common areas shall be located in at least one place per building either indoors or outdoors if permitted.
  - Amenity decks or common areas shared by the office building tenants shall be located in at least one place per building either indoors or outdoors if permitted.

- **Environments**
  - Entry, if not on ground level, must contain at least one elevator at ground level for entry.
  - A professional appearance should be achieved through the exterior facade.
  - Landscaping with areas for vegetation, trees, and grass should be included.
  - Entrance ways shall be clearly visible from the exterior and from interior common areas.
  - Aesthetic elements can create shading, and other horizontal elements that do not exceed 4’-0”.

- **Transportation**
  - Stairs on the entrance must be used to promote access to the ground floor.
  - Canopies may be used as sheltered corridors.
  - Buildings or canopies shall be composed through using glazing, cor-er posts, and slabs.

- **Building Height**
  - The corner of second level retail buildings should be articulated in a way that varies materials, colors, windows, entrances, canopies, and patios.
  - The mass shall closely tie into the concept of the programatic master plan.

**Precedent Features**

- **Entry**
  - There shall be one entrance into the entry from the ground floor to control access.
  - The entrance can be a distinct feature that connects the street to the building entrance.
  - A professional appearance should be achieved through the exterior facade.
  - The primary entry may be clearly visible from the exterior.
  - The entrance shall be clearly visible from the street.

- **Transportation**
  - Canopies may be used as sheltered corridors.
  - Buildings or canopies shall be composed through using glazing, cor-er posts, and slabs.

- **Building Height**
  - The mass shall closely tie into the concept of the programatic master plan.

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**Amenities / Color**

- Materials used for retail/restaurant buildings should create a palette that blends in with other surrounding environments.
- The mass shall closely tie into the concept of the programatic master plan.
- Distinctive colors: (concrete, glass, white paint, stone, metal panels, wood).
- High quality durable materials shall be used in building and canopies shall be resistant to fade/weathering.
- Vegetation and planters as an aesthetic shall be used in a context whole.
- Exterior color: synthetic, glass, other paint colors, metal panels, wood.
- Window/wall glazing will extend floor to ceiling at most instances.
- Canopy conditions may be created by extending floor to ground at most instances.
- Ornamentation shall only be used if they are functional elements contributing to building performance, views, or aiding the definition of implicit boundaries.
- The window to wall ratio should be maximized for increased transparency.
- Ornamentation shall be used to promote access to the ground floor.
- Canopies may be used as sheltered corridors.
- Buildings or canopies shall be composed through using glazing, cor-er posts, and slabs.
- The top of the mass may contain less indoor SF and more usable outdoor space.
- The mass shall closely tie into the concept of the programatic master plan.
- The primary entry way shall be clearly visible from the exterior.
- Columns and structural members should be used to define interior spaces.
- The corners of second level retail buildings should be articulated in a way that varies materials, colors, windows, entrances, canopies, and patios.
- Design elements, such as canopies, shall conform to the concept of the programatic master plan.
Architectural Character

Hotel

Hotels will utilize either a double-loaded corridor or central core corridor to maximize available SF and minimize the incursion of core corridors.

Hotels will use podium construction, otherwise known as a ground floor garage.

Buildings shall express the context of the environment in a way to respect and accentuate the surrounding context.

The hotel may be on the ground floor or as an amenity deck. Upper floors will be for primary residence and have ample occupiable outdoor space.

Description

The hotel building is a structure providing short-term lodging and accommodations for guests. Hotels are composed of various configurations of rooms, ranging from studios to suites.

Process

There shall be a minimum of one entrance from the building ground level, one entrance from inside the garage or at the parking level.

The primary entrance must be the primary entry. This entrance must be at grade level and should reflect the hotel’s branding, being designed or window and door systems, and curtain wall systems.

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The lobby may be on the ground level or amenity deck. The garage entrance should be aligned with the central core that contains vertical circulation leading occupants to either their respective floor or to the main amenity deck.

Pavilions.

Amenity decks may be shared between multiple residential occupancies.

The amenity deck architecture must blend into the overall massing of the building.

The amenity deck shall appear as one continuous component with unified elements creating a professional aesthetic.

Large / Bali

Balconies must be occupiable.

Air conditioning units projecting from the facade are prohibited as well as louvered window exhaust.

Details

Materials should reveal their true nature.

Colors/materials should be durable and anti-corrosive.

Distinctive colors: concrete, glass, white paint, metal panels, wood.

Vegetation and planters as a color/material shall be utilized.

Structures and materials should be weather and wind resistant.

Articulations of the facade will create a rhythm of large massing gestures.

The frontage shall appear as one continuous component with unified elements creating a professional aesthetic.

The frontage may either be open to a public gathering plaza or down a smaller walkway depending on the location of the site the building is situated in.

The maximum window to wall ratio should be used.

Details and ornamentation shall only be used if they are functional, demonstrate craftsmanship, or add to the structural performance, or as a design element.

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Materials / Color

Materials should reveal their true nature.

Materials should be durable and anti-corrosive.

Building fabric shall reflect the structural frame and systems if possible.

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The frontage shall appear as one continuous component with unified elements creating a professional aesthetic.

Large / Balcony

Balconies must be occupiable.

Air conditioning units projecting from the facade are prohibited as well as louvered window exhaust.

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**Footage**

Each building will contain an individualized entrance.

- **Rooms**
  - Rooms may include balconies and/or vegetated patios.
  - Balconies or projections shall help to break up the mass vertically and horizontally.
  - Facade articulations of projections and indentations shall be used as a common thread.

- **Materials**
  - Materials should reveal their true nature.
  - Distinctive colors: (concrete, glass, white paint, metal, pale/tone) shall be used minimally as accents.
  - Materials should be durable and anti-corrosive.
  - Colors/materials should not absorb heat, but reflect light is received with minimal heat gain, maximizing the sustainability initiatives of the masterplan.

- **Fenestration**
  - Continuous elements extending multiple floors will help promote horizontal aspects.
  - Fixed and sliding elements will remain operable elements.
  - Vegetated balconies with green roofs can be provided in upper and ground level mixed use tenant spaces.

- **Lanai / Balcony / Patio**
  - Continuous elements extending multiple floors will help promote horizontal aspects.
  - Fixed and sliding elements will remain operable elements.
  - Vegetated balconies with green roofs can be provided in upper and ground level mixed use tenant spaces.

- **Landscape**
  - The storefront adjacent to pedestrian traffic should use a minimum fenestration amount of 40%.
  - A division with lockable entrances must be provided if an amenity deck is shared between hotel and residential occupancy.

- **Visual Transparency**
  - Visual transparency should be maximized along the frontage that provide an experience sheltered from the outside elements.

- **Street Frontage**
  - The street frontage will have a linear progression of buildings of hotel or residential occupancy.

- **Lobby Architecture / Façade**
  - Representative of paramount situational value of the façade will result in a characterful composition.

**Mood**

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**Procedural Features**

- **Shadow**
  - The massing roofs shall be flat with areas for green roofs and pavilions.
  - Masses shall not block access to view corridors, entering edges that give residents access to green surroundings.

- **Materials**
  - Materials should reveal their true nature.
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Parking Garage

Description

The parking garage shall be designed in accordance with the provisions of the International Building Code, and shall be provided with comfort, convenience, and safety features to accommodate the needs of the facility.

PARKING GARAGE FEATURES

Entry
- The parking entrance shall be a minimum of two goes, with a maximum of two goes per level.
- The entrance shall be clearly marked to minimize pedestrian/vehicular hazards.
- The entrance shall be covered with a canopy.
- The entrance shall be accessible by ADA compliant vertical circulation.

Pavement
- The parking pavement shall be a minimum of two goes, with a maximum of two goes per level.
- The parking pavement shall be clearly marked to minimize pedestrian/vehicular hazards.
- The parking pavement shall be covered with a canopy.
- The parking pavement shall be accessible by ADA compliant vertical circulation.

Building Massing

- The building mass shall closely tie into the concept of the project.
- The building mass shall be designed to blend into the surrounding context.

Fenestration
- Fenestration shall be provided by doors and windows of appropriate size.
- The fenestration shall be designed to accommodate the needs of the facility.

Materials / Color
- Materials used in the making shall be a pale tone of light color to accommodate the needs of the facility.
- Materials shall be durable and aesthetically pleasing.
- Buildings shall utilize two or more colors to create a dynamic building.

Architectural Character
- The architectural character shall be influenced by the surrounding context.
- The architectural character shall be created to blend into the surrounding context.

Articulations / Details
- Articulations shall only be used if they blend into the building mass.
- Articulations shall be used as a common thread, unifying neighboring buildings.

Construction / Color
- Construction materials shall be used to create a dynamic building.
- Construction materials shall be used to create a common thread, unifying neighboring buildings.

Building Entry
- Building entries shall be clearly marked to accommodate the needs of the facility.
- Building entries shall be accessible by ADA compliant vertical circulation.

Building Massing
- Building massing shall be designed in accordance with the provisions of the International Building Code, and shall be provided with comfort, convenience, and safety features to accommodate the needs of the facility.

Materials / Color
- Materials used in each building shall create a pale/tte scheme.
- Materials should be durable and anti-corrosive.
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- The architectural character shall be influenced by the surrounding context.
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Pedestrian and Bike Pathways

**Description**

Pedestrian pathways should consider a wide range of pedestrian desires and should serve as a variety of contextual characteristics. These pathways shall accommodate the needs and desires of different users. The form of the pedestrian pathways shall be appropriate for the variety of users that the area serves, taking into account the system's ability to accommodate various users. For all districts of the development to better access and movement, the pathways created on this site are also intended to connect into the network of pedestrian movement outside the site, providing opportunities to connect with the surrounding communities.

**Principles of Pedestrian Design**

- Make use of the pedestrian pathways in a way that is easily accessible to all users.
- Provide adequate travel width to accommodate the users this is designated for.
- Allow outdoor seating to encroach if adequate width is provided.
- Include shade and seating where appropriate.
- Create safe conditions where bicycles and pedestrians share the same paths.
- Contain landscaped areas and vegetated barriers.
- Provide well-designed beaches and bicycle racks creating pauses at various intervals.
- Elevate crossings over busy roadways.
- Provide shaded connectivity in the new streets and road network.
- Create public safety in the pedestrian zone, and frontage zone will depict activities that occur in such locations along the path.
- Integrate bicycles and pedestrians into an interconnected multi-user network.

**General**

- Serve both transportation and recreation.
- If street parking is provided, the bike lane shall be on the outer edge of the road.
- If street parking is not provided, the bike lane shall be on the outer edge of the road.
- Is street parking is provided on one side of the road, the bike path shall be on the opposing side of the road, sharing roadway with vehicles.

**SITE GUIDELINES**

The site of the ‘New Aloha Stadium Entertainment District’ builds upon the emerging market for which it is uniquely positioned to serve the users and a pedestrian network that caters to the needs and desires of different users. The site is composed of three phases, each of which serves a different purpose and which work together to create a unique, walkable, and engaging place within the urban context. They provide a component in an open space, which transitions from the existing surrounding areas / the ‘New Aloha Stadium Entertainment District’. These guidelines intend to create a pedestrian network of high quality while assisting other guidelines mentioned in this document. They will also help in aiding the organizational stage of the convergence between landscape and architecture.

**Pedestrian and Bike Pathways**

- A bike lane should be clearly visible and accessible to all users.
- The path should have an adequate travel width to accommodate the needs and desires of different users.
- Allow outdoor seating to encroach if adequate width is provided.
- Include shade and seating where appropriate.
- Ensure safe access to surrounding context.
- Landscaping and planting will contribute to visual and psychological comfort.
- Bike lanes shall be on the outer edge of the road.
- Pathways serving both pedestrians and bicycles should be significantly widened (10 foot wide minimum) for comfortable passing.
- Pathways serving both pedestrians and bicycles shall be on the outer edge of the road.
- Pathways serving both should be in the same path.
- Elevate crossings over busy roadways.
- Bike racks shall be provided at major pedestrian nodes and intersections.
- Bike nodes shall be provided at major pedestrian nodes and intersections.
- Bike lanes shall be provided at major pedestrian nodes and intersections.
**Pedestrian Bridges**

**Description:**
- Pedestrian bridges are used throughout the site to provide vertical and horizontal movement within the program.
- They should be designed to reflect the construction and use elements of the same design language.
- Pedestrian bridges shall express the construction method and materials in a way to reveal the true nature of the material.
- Pedestrian bridges shall be designed to seamlessly integrate into the overall massing.
- Pedestrian bridges shall be designed to enhance the overall circulation of pedestrians and vehicles on this site.

**Articulations / Details**
- Entrance points on to the bridge shall be clearly marked.
- Entrance areas may use covered conditions at transitions to the landscape/hardscape.
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Public Plazas

**DESCRIPTION**

All of the primary crowd gathering spaces for the entire public plaza shall be clearly defined and architecturally defined so that the plaza serves as the vertical and horizontal extensions of the main streets. The public plazas can be made up of smaller distinct zones to facilitate movement and connections, along with defined zones to allow for flexibility in the design. Each plaza shall have an identity of its own to create a sense of place and place making.

**Component Definitions**

- **Railing and Barrier**
  - plaza edges and boundaries shall be clearly defined and architecturally defined so that the plaza serves as the vertical and horizontal extensions of the main streets.
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  - ample public seating shall be provided, especially near significant nodes and intersections.
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- **Articulations / Details**
  - Symmetrical or asymmetrical articulations will create a harmonious composition.
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- **Materials / Color**
  - Every face shall be articulated with proper colors and materials.
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- **Planted Areas**
  - Site stormwater management elements, such as retention planters, bioswales, or community garden rainwater collection, are encouraged and should be incorporated into the overall design.

- **Parking**
  - Be visible and easily accessible for persons with disabilities.

- **Roots**
  - All plants shall support underground root systems of the larger master plan.

**RECOMMENDATIONS**

- Plaza spaces shall be designed to provide a seamless integration of the public plaza with the surrounding buildings, roadways, and pedestrian spaces.
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**PUBLIC PLAZAS**

- Plaza spaces shall serve as wayfinding nodes that overlay pedestrian circulation and communal spaces with natural and architectural elements while connecting adjacent retailers, garages, residential towers, hotels, and other buildings.
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**Plaza Spatial Components**

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Public Parks

**Architectural Character**

- Each park entrance creates a conditioned that presents a unique identity. Each entrance should reflect the program and context of the park or adjacent context.

- The overall forms of the architectural elements should engage with the landscape and be expressed in a way that communicates their function.

- The construction method of all elements, whether structural or non-structural, should be visible where appropriate to reveal the tectonics.

- Materials should reveal their true nature. Materials should be durable and anti-corrosive.

- The color shall reflect the respective phases and elements. V
definitional colors: (concrete, glass, white and not create conditions out of the public line of sight.

- Any architectural element shall not block or change or the addition of a barrier, such as railings, seating elements, or planting.

- Railings will all be treated similarly. Railings shall be treated as the width of other buildings or places of connection. Spatial barriers may not obscure visibility.

- Elevated barriers and occupiable zones shall feature natural edges or otherwise accentuate the construction and materials in a way to reveal and not conceal the tectonics.

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- The color shall reflect the respective phases and elements. V
definitional colors: (concrete, glass, white and not create conditions out of the public line of sight.

- Any architectural element shall not block or change or the addition of a barrier, such as railings, seating elements, or planting.

- Railings will all be treated similarly. Railings shall be treated as the width of other buildings or places of connection. Spatial barriers may not obscure visibility.
Lighting and Visibility

**Amphitheater Lighting**

- The specific design of these elements shall be determined at the time of installation based upon the location and type. All signage shall comply with city and state rules and regulations, including the state Land Use Ordinance, and will be LED to conserve energy and reduce glare. As a new entertainment district (previously BMX-3) and residential neighborhood and community district, the site may have specific special district rules and standards, specific heights and setbacks will not be quantified.

**Pedestrian Pathway Lighting**

- Pedestrian Pathway Lighting should use bollard type lighting to maintain safety and accessibility while minimizing excessive light pollution.
- Roadway Lighting shall maintain a visible roadway at all times and use minimizing light pollution on surrounding buildings, roadways, and natural spaces.
- Bridge Lighting should try to conceal lighting fixtures in structures, buildings, and natural spaces.
- Lighting temperature may change to reveal and not conceal the tectonics.

**Signage and Navigation**

- Prohibited Signs: Signs that constitute a traffic hazard due to size, content, or illumination. Those signage guidelines look at the design and placement of on site signage, aimed at setting consistency throughout the site.

**Facade Lighting**

- Facade lighting should be designed to enhance the surrounding development.
- Floral and foliage lighting that creates the NASED signage character. This sign type is important as it sets the image and quality of the overall development. The sign shall not be placed in a highly visible location or within the right of way. This sign may have specific special district rules and standards, specific heights and setbacks will not be quantified.

**Grand Sign**

- The sign type shall be placed in a prominent location such as near a prominent intersection that is recognized as being a part of the NASED site. The project will develop a unique typology that creates the NASED signage character. The sign shall maintain a consistent, while varied, light fixture design that creates a more natural lighting environment.

**Pylon Sign**

- Pylon signs should be designed to create a more natural lighting environment.

**Wayfinding Sign**

- Wayfinding signs should be located and aimed for easy visibility.

**Call Station with a Distinctive Light**

- Call stations should be placed in a highly visible location such as near a prominent intersection that is recognized as being a part of the NASED site. The project will develop a unique typology that creates the NASED signage character. The sign shall maintain a consistent, while varied, light fixture design that creates a more natural lighting environment.
Main Accessway Signs
The main accessway signs announce entering the district, setting the tone for the new entertainment district. These signs should be incorporated into the streetscape and contain the following characteristics:

- Gateway entrance name
- District name
- Incorporation into existing design language
- Compatibility with existing design elements
- Do not block lines of sight
- Visually attractive and not obtrusive
- Appropriately scaled with proportions relating to contextual cues.

Wayfinding Signs
Wayfinding signage applies to vehicular and pedestrian traffic. The purpose of these signs is to direct people to their respective destinations on site, such as parks, hotels, residences, businesses, parking garages, main entrances, and exits. The signs should be in bold, easy-to-read fonts. The location of these signs should be such that they do not obstruct pedestrian pathways or right-of-way. Signs shall comply with the following characteristics:

- Typology shall be an easily readable font
- Similar, but contain distinctive features for different viewing types
- Signs for vehicles should not obstruct pedestrian pathways or right-of-way
- Signs for pedestrians should be easily readable from a standard standing height
- Profiles shall be kept slender to appear transparent from non-viewing angles
- Materiality shall be durable and anti-corrosive
- Materials should complement surrounding context

Streetscape Signs
The streetscape signage shall be incorporated along major thoroughfares, intersections, and intersections at major thoroughfares. These signs should be natural in appearance, thin and slender in profile, and emphasize materiality over painted colors. These signs should be similar to street signage, but distinctively different. These signs should contain the following characteristics:

- Natural in appearance
- Thin and slender in profile
- Emphasize materiality over painted colors
- Similar design language to street signage
- Incorporation with other contextual elements such as greenscape or walkways

Marketing Signage
This type of signage refers to signs that advertise the name of the establishment such as retailers, restaurants, and offices. These signs are meant to signify the business and draw attention to their activity. These signs shall comply with the following characteristics:

- Do not obstruct the pedestrian line of sight
- Unobtrusive to the overall architectural composition
- Placed above the entrance to the facility
- Do not hang or provide places for animal nesting
- Do not move or cause noise
- Have a common material and typology for all tenants per structure
- Use a material and color palette that is complementary to the architectural design.
Appendix A-4:

WJE Existing Conditions Study
ALOHA STADIUM
Structural and Safety Evaluations:
Weathering Steel and Decking Corrosion Assessment
DAGS Job No. 12-10-0651
99-500 Salt Lake Boulevard
Halawa, Honolulu County, Hawaii

VOLUME 1 OF 2 VOLUMES

Final Report
December 12, 2018
WJE No. 2014.6720.1

Prepared for:
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Public Works Division, Planning Branch

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EXECUTIVE SUMMARY

This report summarizes findings related to “Aloha Stadium - Structural and Safety Evaluations: Weathering Steel and Decking Corrosion Assessment” [DAGS Job No. 12-10-0651]. The primary objective of this project is to perform interim assessments related to structural safety evaluation while the State of Hawaii considers possible replacement of the existing stadium. This 2018 assessment is the second of an anticipated series of interim assessments; the first interim assessment was performed in early 2016, with findings presented in the report “Aloha Stadium - Structural and Safety Evaluations: Weathering Steel Corrosion Assessment,” Final Report, October 26, 2016.

The present interim assessment is limited to two major safety-related aspects:
- An assessment of corrosion-related damage to the weathering steel primary structural members in areas of the stadium where the original protective coating systems, installed in the 1980s and 1990s, have not yet been replaced or otherwise maintained in the recent health and safety improvement projects at the Aloha Stadium; and
- An assessment of corrosion-related damage to the lightweight concrete-and-metal decking systems, some of which were installed at the time of original stadium construction in the early 1970s, and some of which were installed in the 1980s and 1990s as replacements for original lightweight decking installed in the 1970s.

The findings from this 2018 interim assessment are used to prioritize recommended repairs. The steel seating tread-and-riser plates were surveyed under different projects, with the results of those surveys included in this report. Structural steel members that were recoated since 2007, composite concrete-and-metal decking installed since 2015, partitions, paneling, siding, stairs and stairwells, and other miscellaneous steel at the stadium were not included in the scope of this interim assessment.

The assessment methodology consisted of a visual survey that assigned a condition state to each structural steel member and lightweight floor decking panel, including a consideration of the structural connections related to the steel member or the bearing conditions of a lightweight decking panel, as follows:
- Condition State 1 (CS1) – No discernable coating failure on steel members or the visible surfaces of the lightweight decking; no corrosion is assumed. These members and decking panels pose no known immediate concern for health and safety of occupants of the structure.
- Condition State 2 (CS2) – Visual signs of localized coating failure with only minor surface corrosion on steel members or the visible surfaces of the lightweight decking. Section loss is assumed to not be appreciable. Health and safety implications of CS2 members include the eventual progression of observed deterioration into Condition State 3, and the potential for corrosion products and debonded coatings to displace from the surface of the steel member or the decking, becoming a nuisance and a relatively minor safety concern, to a lesser degree than for members classified as Condition State 3.
- Condition State 3 (CS3) – Visual signs of coating failure and noticeable corrosion on steel members or the visible surfaces of the lightweight decking. There appears to be notable corrosion-related section
losses in the steel member or the decking. Health and safety implications of CS3 members include corrosion products and debonded coatings that have the potential to displace from the surface of the steel member or decking, becoming a nuisance and a relatively minor safety concern.

- **Condition State 4 (CS4)** – Visual signs of coating failure on the steel member or the decking accompanied by pronounced corrosion of the steel member or the decking itself. Corrosion-related section loss in the steel member or decking is not only visibly apparent, but appears to be so pronounced that the structural performance of the steel member or its structural connections, or the decking or its support bearing conditions, is called into question.

Based on the observed condition state, expected levels of work to address identified concerns are as follows:

- **Condition State 1 (CS1)** – Remediation of concerns with steel members classified as CS1 involves an application of maintenance overcoats onto the topcoats of the corrosion mitigation coatings within the window of maintenance overcoating feasibility, estimated to be 10-15 years from the application of the corrosion mitigation coatings that are in place. The undersides of the lightweight decking system panels that are classified as CS1 should be recoated with corrosion mitigation coatings and the pedestrian traffic coatings on the concrete walking surface should be replaced, along with repairs to the concrete substrate; however, in lieu of maintenance-type repairs, it may be more cost-effective over the long term to replace the lightweight decking system with a thicker, conventional composite metal decking system.

- **Condition State 2 (CS2)** – Remediation of concerns with steel members classified as CS2 involves entire removal of existing protective coating systems and installation of new corrosion mitigation protective coating systems. Areas of lightweight decking system classified as CS2 should be replaced with a thicker, conventional composite metal decking system.

- **Condition State 3 (CS3)** – Remediation of concerns with steel members classified as CS3 involves complete removal of existing protective coating systems and installation of new corrosion mitigation protective coating systems. High priority CS3 steel members have active corrosion concerns that should be considered for mitigation in the near-term, but not necessarily needing intervention in the next 24 months. Similarly, high-priority areas of metal decking classified as CS3 should be replaced with a thicker, conventional composite metal decking system in the near-term, but not necessarily needing intervention in the next 24 months.

- **Condition State 4 (CS4)** – Remediation of concerns with steel members classified as CS4 requires structural modifications to strengthen affected components of the member or to eliminate construction details that inadvertently result in accelerated corrosion. CS4 steel members identified as “Immediate” priority have concerns over structural performance that should be addressed immediately; and CS4 steel members identified as “24 month” priority have concerns over structural performance that should be addressed within 24 months. High-priority areas of metal decking classified as CS4 should be replaced with a thicker, conventional composite metal decking system within the next 24 months.

Repairs are recommended to be undertaken for the corrosion related issues summarized in Table 1, which is generally organized by groups of members as described in Appendix A, and further subdivided by condition state. The current status of the repairs that were previously-recommended for repair in our 2016 corrosion assessment report is summarized in Table 2; incomplete repairs and unaddressed items in Table 2 continue to be recommended for repair. For groups where the configuration of all members and their connections within the group are identical, or nearly identical, the entire group is assigned the most severe condition state.

Suggested time frames are provided under “Priority”, which relates to the observed condition state; the indicated time frames are relative to the inspection date of August 2018. Repairs to CS4 members, connections, and decking are urgent and are recommended to be completed within, at most, 24 months from the inspection date of August 2018.

Due to their criticality to continued structurally-safe operations of the existing stadium, particular members classified as CS4 are identified to be repaired immediately. If these repairs cannot commence immediately, the members identified for immediate repair should be monitored for on-going deterioration during the delay period; the delay period should not exceed 1 year. The intent of the monitoring would be to generally assess that the stadium can be occupied for continued operations during the delay period. The nature of the monitoring program, and the frequency of monitoring, remain to be developed.

The timing of repairs to CS3 High Priority and CS2 Medium Priority members, connections, and decking will be contingent on planning and funding decisions pertaining to the facility. It is advisable to consider undertaking projects to address all of these items as soon as practical, to mitigate the adverse effects of corrosion that is progressing at an accelerating rate with time (Page 33).

The 2018 survey revealed noticeable corrosion-related losses, classified as CS4, in particularly critical groups of structural members in the stadium. More detailed assessments, including physical measurements of section losses and detailed investigations, are recommended for these particularly critical members as described later in this report (Page 38).

In addition to the repairs of deteriorating steel members, metal decking, and connections, a one-year interval between inspections is recommended (Page 38). The round of inspections summarized in this report were performed during July and August 2018. Therefore, the next recommended inspection date is August 2019. Future recurring inspections should take place on an annual basis.

At the time that the recommended 2019 inspection is anticipated to be performed, the renewed protective coating systems that were installed under construction contracts completed in 2009 through 2011 will have been in service for an average of 10 years. It is therefore recommended that weathering steel members which received coatings under construction contracts that were completed prior to and in 2011 be included in the 2019 inspections.
### Table 1. Summary of Recommended Repairs - 2018 Assessment

<table>
<thead>
<tr>
<th>Priority (Relative to August 2018)</th>
<th>2018 Condition State</th>
<th>Group (App. A)</th>
<th>Group Description (2018 Assessment)</th>
<th>Group Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>CS4</td>
<td>02</td>
<td>Pronounced section losses at flanges and web at base of inclined bracing member in endzone stands at concrete barriers along Grid Line F-9</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS4</td>
<td>03</td>
<td>Connections between girder and raker column, Line F at top of Blue seating section</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS4</td>
<td>04</td>
<td>Limited section losses in sub-decking hat channels or in decking itself, at scattered across all seating stands</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS4</td>
<td>05</td>
<td>Severe corrosion at multiple locations in the roof structure over pedestrian entry Gate 1 (refer to summary memo in Appendix B)</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS4</td>
<td>06</td>
<td>Severe corrosion at multiple locations in the roof structures over pedestrian entry Gates 5, 6, 7, 8</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS4</td>
<td>09</td>
<td>Seating Plate Repairs, all remaining Orange seating rows for both sideline stands and all remaining northeast sideline stand Yellow seating rows not addressed in H&amp;S4 and H&amp;S5</td>
<td>Pending</td>
</tr>
<tr>
<td>Medium</td>
<td>CS3</td>
<td>06</td>
<td>Electrical Room Lightweight Decking Floor Slab short-term Stabilization</td>
<td>Included in H&amp;S4</td>
</tr>
<tr>
<td>Medium</td>
<td>CS2</td>
<td>09</td>
<td>Seating Plate Repairs, all remaining Orange seating rows for both sideline stands and all remaining northeast sideline stand Yellow seating rows not addressed in H&amp;S4 and H&amp;S5</td>
<td>Pending</td>
</tr>
<tr>
<td>Medium</td>
<td>CS3</td>
<td>10</td>
<td>Seating Plate Repairs, all Blue seating rows, all Brown (loge) seating rows, northeast sideline stand Red seating rows, and north sideline Red seating rows in Sections U, V, UU, and VV</td>
<td>Pending</td>
</tr>
</tbody>
</table>

### Table 2. Updated Summary of Previously-Recommended Recommended Repairs - 2016 Assessment

<table>
<thead>
<tr>
<th>Updated Priority (Relative to August 2018)</th>
<th>2016 Condition State</th>
<th>Group (App. A)</th>
<th>Group Description (2016 Assessment)</th>
<th>Group Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>CS4</td>
<td>03</td>
<td>Connections between girder and raker column, Line F at top of Blue seating section</td>
<td>Pending: Anticipated for H&amp;S5</td>
</tr>
<tr>
<td>Completed</td>
<td>CS4</td>
<td>05</td>
<td>Fiberglass angle falling hazard mitigation, longer term</td>
<td>Pending: Anticipated for H&amp;S5</td>
</tr>
<tr>
<td>Completed</td>
<td>CS4</td>
<td>06</td>
<td>Floor deck short-term stabilization beneath a vestry ramp</td>
<td>Pending: Anticipated for H&amp;S5</td>
</tr>
<tr>
<td>Completed</td>
<td>CS3</td>
<td>09</td>
<td>Seating Plate Repairs, various Orange and Yellow seating rows; also all aisles with step boxes</td>
<td>Pending: Anticipated for H&amp;S5</td>
</tr>
<tr>
<td>Completed</td>
<td>CS3</td>
<td>09</td>
<td>Seating Plate Repairs, all remaining Orange seating rows for both sideline stands and all remaining northeast sideline stand Yellow seating rows not addressed in H&amp;S4 and H&amp;S5</td>
<td>Pending</td>
</tr>
<tr>
<td>High</td>
<td>CS3</td>
<td>09</td>
<td>Seating Plate Repairs, all remaining Orange seating rows for both sideline stands and all remaining northeast sideline stand Yellow seating rows not addressed in H&amp;S4 and H&amp;S5</td>
<td>Pending</td>
</tr>
<tr>
<td>Various</td>
<td>CS2</td>
<td>09</td>
<td>Seating Plate Repairs, all Brown (loge) seating rows, northeast sideline stand Red seating rows, and north sideline Red seating rows in Sections U, V, UU, and VV</td>
<td>Pending</td>
</tr>
<tr>
<td>N/A</td>
<td>CS2</td>
<td>09</td>
<td>Corrosion mitigation at CS2 members (all remaining members and connections that are presently painted brown)</td>
<td>Pending</td>
</tr>
</tbody>
</table>
INTRODUCTION
The Planning Branch of the Public Works Division (PWD) of the Department of Accounting and General Services (DAGS), State of Hawaii, requested that Wiss, Janney, Elstner Associates, Inc. (WJE) perform a limited study regarding corrosion of weathering steel members and floor slab lightweight decking systems at Aloha Stadium. The intent of this study is primarily to identify and prioritize recommended repairs of these aspects of the Aloha Stadium to maintain health and safety.

BACKGROUND
Description of Stadium
The Aloha Stadium (Figure 1) is comprised of six structurally independent seating stand modules. These seating stand modules are referred to under the following titles and abbreviations in the present report:

- North Endzone (NEZ) (formerly identified as North Fixed)
- South Endzone (SEZ) (formerly identified as South Fixed)
- Northeast Sideline (NESL) (formerly identified as Northeast Moveable)
- Southeast Sideline (SESL) (formerly identified as Southeast Moveable)
- Northwest Sideline (NWSL) (formerly identified as Northwest Moveable)
- Southwest Sideline (SWSL) (formerly identified as Southwest Moveable)

Figure 1. Aloha Stadium, as viewed from a vantage point on Gridline 17 in the Blue seating section on the southeast sideline seating stand. The south endzone seating stand is on the left side, southwest and northwest sideline seating stands are visible across the field, and the southeast sideline seating stand is in the foreground.

The seating stand modules have previously been referred to as moveable or fixed, referring to the historical capability to relocate the sideline modules between baseball and football configurations. However, based on findings from our 2005 planning study, a policy decision was made by the Aloha Stadium Authority to no longer host baseball events. Consequently, the stadium now remains in the football configuration.

The structural and architectural plans for the stadium utilize numbered gridlines in a radial pattern aligned with the raker frames and lettered gridlines oriented parallel to the edges of the field (Figure 2). These gridline identifiers were established on the original design documents for Aloha Stadium.

Figure 2. Schematic illustrations of the base truss system, located beneath the sideline seating stands, showing trusses along lettered transverse gridlines (left) separately from trusses along numbered radial gridlines (right).

Because of their prominence at the stadium, seating section identification letters are used to reference many features at the stadium, Figure 3. Each lettered seating section spans between numbered radial gridlines. The seating sections on the west half of the stadium are identified with single letters. Seating sections on the east side of the stadium are identified with double letters, corresponding to the single-lettered sections on the opposite side of the north-south line of symmetry.

Each of the structurally independent stand modules extend from ground level up to a high roof structure that is cantilevered over the yellow seating sections, Figure 4. Seating sections are differentiated vertically by colors, from lowest level (Field Level) proceeding upwards:

- Orange (Lower Field Level)
- Blue (Upper Field Level)
- Brown (Loge Seats or Box Seats)
- Red (Lower Tier Level)
- Yellow (Upper Tier Level)

The seating sections are step-like, tread-and-riser systems that form a seating bowl. Typically the seating sections are constructed of 1/4-inch steel plate tread-and-risers, with the exception of the Orange seating level at the endzones, which utilize a reinforced concrete tread-and-riser construction. The framing that supports the tread-and-riser is typically structural steel, with the exception of the lowest level of the endzone stands, where the reinforced concrete tread-and-risers are supported by reinforced concrete framing.
Figure 3. Exploded (colored sections not vertically stacked) plan view of the Aloha Stadium, indicating seating section letter identifiers and radial gridline numbering scheme.

Figure 4. Schematic section through Aloha Stadium sideline seating stand structure.

Access to the seating sections is accomplished via two main concourses. The lower concourse is located approximately at the elevation of the top of the Orange seats, providing access to the Orange and Blue seating sections. The upper concourse is located at the top of the Red seating level, providing access to the Brown, Red, and Yellow seating sections. The structural floor slab systems that support the two concourse levels and other horizontal traffic bearing surfaces, such as the cross-aisles and vomitory ramps, are typically constructed of concrete material of various construction detailing. The various floor slab systems will be described in detail in a later section of this report.

Four spiral ramp structures exist to provide pedestrian access to the upper concourse level from the lower concourse level. The original spiral ramp structures, which had been constructed using weathering steel, were replaced in their entirety with hot dipped galvanized and painted mild steel framing in the 1990s.

**Corrosion Mitigation Coatings**

The primary structural systems at the Aloha Stadium are constructed using weathering steel, which requires a protective coating system (high-performance paint) to prevent corrosion in the chloride-laden, Hawaiian environmental conditions. As originally constructed during the early 1970s, the weathering steel at the stadium was uncoated. However, by 1980, significant corrosion developed in primary structural members throughout the stadium, causing concern for the integrity of the structure.

A corrosion mitigation program was developed during the 1980s, and a protective coating system was applied to the weathering steel throughout the stadium structure during an approximately 10- to 12-year long period between the mid-1980s and 1995. The protective coating system applied in this time period is
comprised of three parts: an organic zinc-rich primer, an epoxy intermediate coat, and an aliphatic urethane topcoat.

Since originally applied, no major maintenance of the coating system is known to have taken place prior to corrosion mitigation efforts that commenced in 2009. At the present time, corrosion mitigation remains ongoing, with the circa 1980s-1990s protective coatings in some areas of the stadium having aged beyond 30 years.

**Prior Condition Survey of Existing Coating Systems**

As part of Phase 2 of Structural Certification, a comprehensive field examination of the protective coating systems of Aloha Stadium was conducted by WJE during the fall of 2007. Over 1,100 individual field tests were performed on the existing coating systems at over 220 discrete locations throughout Aloha Stadium. An analysis was performed on the collected data. Information regarding the condition study and recommendations can be found in the report Aloha Stadium, Structural Certification Task 2.2, Condition Survey of Protective Coatings, Final Task Report, October 31, 2008, WJE No. 2007.4596.2 [DAGS Job No. 12-10-0374].

The conditions of the coating systems were tested or rated in accordance with accepted standards for adhesion, thickness, degree of corrosion present, degree of corrosion undercutting, and the degree of chalking. Other coating defects such as peeling, blistering, and cracking were visually evaluated along with additional coating related concerns such as limited resistance to water ponding, erosion of coatings, pinholes in coatings, and questionable coatings selected for maintenance painting. Samples of coatings were removed from selected stadium surfaces and tested in the laboratory for identification of the coatings’ generic binder and for the presence of hazardous metals content. The results of the field and laboratory tests were analyzed, and field observations were assessed. It was generally found that the ageing coatings were experiencing localized failure at various locations throughout the entire stadium and were reaching the end of their serviceable life, if not beyond serviceability.

An Overcoating Acceptance Criteria was developed on the basis of commonly-accepted industry practices for acceptable levels of adhesion, thickness, and degree of corrosion in combination with our own experience with coating systems and exercise of our professional judgment. When the Overcoating Acceptance Criteria was applied to the field test results, it was found that the coatings of a significant portion of the coated components at Aloha Stadium were not suitable for overcoating. At the time of the study in 2007-2008, all of the existing protective coatings at Aloha Stadium had aged more than 10 years, and some had been in service for 20 or more years. The field testing revealed that deterioration of the coatings, as measured by adhesion testing, was increasing with age (Figure 5). For the generic type of existing coating system, original degree of surface preparation, and the given environment, industry references for service life indicated 10 years to be the ideal age at which to apply a maintenance overcoat to the generic type of existing coating system utilized at the stadium, and that practical service life was fully exhausted at 16 years.

Application of the Overcoating Acceptance Criteria identified a limited proportion of components at the stadium, at the time of the 2007-2008 condition survey, which were marginally eligible for overcoating. Even though some initial construction cost benefit may have been realized by judiciously overcoating these components as compared to repainting, the economic benefit was not certain over long-term life cycle financial analysis, given the deteriorated coating conditions and the difficult access to many of the steel components for future maintenance and repairs. This is because overcoating of these components will come with a reduced service life as compared to the service life of a repainted component where existing coatings are removed and new coatings are applied. In addition, a higher risk of failure of the overcoat was anticipated where existing coatings in their 2007-2008 condition would be overcoated without regard to the presence and proportion of coatings with poor adhesion. Furthermore, it was unlikely that coating manufacturers would provide a long-term warranty, if any warranty at all, for the overcoating application even if areas of poor adhesion were to be addressed.
At the time of the 2007-2008 condition survey, WJE provided options to selectively remove areas of poorly adherent existing coating to reduce the risk of failure of an overcoat, or to otherwise remove and replace the existing coating systems. For the overcoating option, investigative trial installations and assessment would be required to demonstrate whether an overcoated system could achieve a reasonable performance.

The factors related to overcoating supported the State’s decision at that time to completely remove and replace the existing coatings and forgo investigative trial installations related to the overcoating approach.

Recoating as Part of Corrosion Mitigation

On this basis, the State of Hawaii began a phased program for renewal of the protective coatings system over a series of construction projects, commencing in 2009, and continuing to the present. The renewal program consists of complete removal of the original coating system and replacement with a new coating system.

Based on the results of the field survey testing, and with no provision made to pursue options for overcoat trial installations, it was recommended that the stadium should be recoated. Recoating is defined here as the complete removal of any existing protective coating system to bare metal followed by application of a new protective coating system. Various projects at Aloha Stadium, completed to date since 2009 and including current projects (H&S4, nearing final acceptance, and H&S5, pending award), have included removal of existing protective coatings and installation of new protective coatings as part of corrosion mitigation of structural steel at the Aloha Stadium. The replacement protective coating system applied commencing in 2009 is comprised of three parts: an organic zinc-rich primer, an epoxy intermediate coat, and fluoropolymer topcoat.

The protective coatings have been renewed in several critical areas of the stadium, including:

- The main high roof and its supporting cantilever columns, throughout the stadium
- The diagonal bracing frame (at the rear of the seating stands), and the hub assemblies within this bracing, throughout the stadium
- Inclined braces between bracing frame hubs and raker frame knee joints, on sideline seating stands
- Main stairs on sideline stands
- Framing in direct contact with new, replacement lower (main) level concourse decking, northeast and northwest sidelines

The scope of recoating corrosion mitigation is described generally for each project in the following itemization; for specific locations of demising lines between the various projects, the individual project documents should be reviewed. Projects completed since 2009 to date, and projects that are currently active, are listed below:

Recoating Projects

The corrosion mitigation work, including both recoating and repairs to or replacement of structural steel members, was performed at the main high roof cantilever beams, girders, purlins and light-box framing.

- **Roof Phase 1:** [“Aloha Stadium, Replace Metal Roof Deck and Transformers (Sections FF to KK and RR to VV) DAGS Job No: 12-10-0518”] - Completed 2009
- **Roof Phase 2:** [“Aloha Stadium, Replace Metal Roof Deck and Transformers (Sections LL TO QQ, R & S, & L TO Q) DAGS Job No: 12-10-0598”] - Completed 2010
- **Roof Phase 3:** [“Aloha Stadium, Replace Metal Roof Deck and Transformers (Sections AA TO EE, & A TO K) DAGS Job No 12-10-0620”] - Completed 2011

Areas of Stadium not yet Recoated

However, the original coatings systems have not yet been replaced in significant areas of the stadium, including:

- The structural base truss systems that support all four sideline seating stand structures: northwest, southwest, southeast and northeast sideline stands
- The main high roof and its supporting cantilever columns, throughout the stadium
- Inclined braces between bracing frame hubs and raker frame knee joints, on sideline seating stands
- Main stairs on sideline stands
- Framing in direct contact with new, replacement lower (main) level concourse decking, northeast and northwest sidelines

**Structural and Various Health and Safety (H&S) Improvements**

The corrosion mitigation work, including both recoating and repairs to or replacement of structural steel members, was performed.

- H&S Phase 1 (H&S1): [DAGS Job No. 12-10-0605] - Exterior cross bracing, from ground to roof, all stands - Completed 2013
- H&S Phase 2 (H&S2): [DAGS Job No. 12-10-0636] - North Concourse Waterproofing - No corrosion mitigation work - Completed 2013
- H&S Phase 3 (H&S3): [DAGS Job No. 12-10-0736] - Bracing between upper and lower concourse (sidelines), coating of areas below the lower concourse directly affected by structural upgrades - completed 2016
- H&S Phase 4 (H&S4): [DAGS Job No. 12-10-0797] - Primarily seating plate corrosion mitigation work and isolated corrosion mitigation on structural members, connections, and decking - currently constructed and nearing final acceptance
- H&S Phase 5 (H&S5): [DAGS Job No. 12-10-0865] Primarily seating plate corrosion mitigation work and isolated corrosion mitigation on structural members, connections, and decking - currently pending award

**Lightweight Metal Decking Floor Slabs**

Both levels of concourse slabs and other horizontal traffic-bearing surfaces, such as the cross-aisles at the tops of the Orange, Brown and Red seating areas, the slabs supporting the concession stands and restrooms, and the slabs of the vomitory ramps, are typically constructed of concrete materials with metal decking substrates of various construction detailing.

At both of the endzone seating stands, the slabs of lower concourse, the concession and bathroom areas that adjoin the lower concourse, and concourse vomitory ramps, and the cross aisle at the top of the Orange seating area are comprised of reinforced-concrete slabs supported by reinforced-concrete framing systems.
For all of the remaining areas of the Aloha Stadium seating stands, the original, circa 1970s floor slabs were constructed using a unique system of light-gage hat channels (“sub-decking”) supporting a light-gage, galvanized, corrugated metal deck (“decking”) topped by a thin concrete slab that is nominally 1 inch thick including the depths of the flutes of the corrugated metal deck and the concrete (Figure 6), collectively identified as a “lightweight decking system.” The durability of this circa 1970s lightweight decking system was poor, and as a result, after less than 6 years of service life, the circa 1970s lightweight decking components were replaced with a nearly-identical lightweight decking system that also used galvanized steel components, with the further addition that a waterproof traffic coating was applied to the walking surface of the thin concrete slab to improve the durability of the replacement system components. Replacement of the circa 1970s lightweight decking system commenced in 1981, taking place in phases over the course of the 1980s.

Re-Decking with Conventional Decking System as Part of Corrosion Mitigation

Even with the addition of a waterproof traffic coating to the walking surface, the service life of the circa 1980s replacement lightweight decking system proved to be on the order of 20 to 25 years. This means that in many areas of the stadium, the circa 1980s replacement lightweight decking system is nearing the end of its service life.

Therefore, some limited re-replacement of the circa 1980s replacement lightweight decking system occurred in 2015, at selected areas of the northeast and northwest sideline seating stands. The circa 1980s lightweight decking system was replaced with a more conventional composite concrete-and-metal deck system (Figure 7), including application of a waterproof traffic coating to the walking surface. This replacement deck system is anticipated to have improved durability and longevity as compared to the existing lightweight deck system, even though the conventional composite deck system will have a larger self-weight.

The installation of the conventional decking system was completed under the following construction project:


The specific areas where conventional decking system has been installed include:

- NESL, at the rear of the lower concourse level, from the line of columns along Grid Line F to the outside edge of the concourse slab at Grid Line G;
- NESL, the cross aisle at the top of the Orange seating section;
- NWSL, at the rear of the lower concourse level, from the line of columns along Grid Line F to the outside edge of the concourse slab at Grid Line G; and
- NWSL, the cross aisle at the top of the Orange seating section;

The H&S4 and H&S5 projects do not include any large areas where conventional decking was installed, although H&S5 is anticipated to include installation of replacement conventional decking at relatively limited areas of the cross aisles at the top of the Orange seating sections of the southeast and southwest sideline seating stands. Instead, for the most part, the H&S4 and H&S5 projects provide supplemental support to selected, deteriorated areas of the existing lightweight decking rather than replacement of the deteriorated lightweight decking. The supplemental support should be considered an interim measure, intended to stabilize the deteriorated lightweight decking until such time as conventional decking can be installed in the affected areas.

Areas of Stadium not yet Re-Decked

General locations in the stadium where the lightweight decking systems remain in place include the following:

- Upper concourse walkways and vomitory passages, all seating stands throughout the stadium
- Cross aisles at the top of the Red seating section, all seating stands throughout the stadium
- Cross aisles at the top of the Brown (loge) seating section, all seating stands throughout the stadium
- Cross aisles at the top of the Orange seating section, NESL and SWSL
- Lower concourse concession, restroom, and back-of-house areas, along with vomitory passages, all sideline seating stands
- Lower concourse outer walkways, NESL and SWSL

Figure 6. Schematic illustration of existing lightweight decking system at Aloha Stadium.

Figure 7. Schematic illustration of circa 2015 replacement decking system at Aloha Stadium.
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CORROSION ASSESSMENT METHODOLOGY

Basis for Corrosion Assessment Work

WJE has been informed by DAGS that evaluation for construction of a separate new stadium to replace the existing Aloha Stadium is in progress. Therefore, maintaining health and safety at the existing stadium should recognize the possibility for replacement of the stadium. Such maintenance should be anticipated over an estimated eight-year period while a new stadium is funded, designed, and constructed. The anticipated eight-year duration commences from the time that a firm decision is made by the State to pursue construction of a new stadium.

A plan of action was discussed in 2016 with DAGS to perform structural safety inspections and evaluations modeled on similar inspections that are performed on highway bridge structures. Safety inspection and evaluation only considers the effect of dead and live loading; lateral loading effects (wind, earthquake) and effects of occupant-induced vibrations are not considered. The corrosion assessment reported herein includes not only safety inspections, but also collects condition information about coatings, structural members, and floor slab metal decking; this condition information can be used to identify structural steel members and areas of floor slab decking having conditions in need of attention, and to prioritize the necessary work related to these members and decking.

Structural Members and Floor Slabs Selected for Inspection and Evaluation

Weathering Steel Members with Protective Coatings

Our efforts related to safety inspection and evaluation focus on those areas of the existing stadium where the original protective coatings system installed circa 1980s and 1990s have not yet been replaced. These members received a brown top coat or did not receive any top coat, leaving the white epoxy intermediate coat visible. Members where the original protective coating systems have been removed and replaced are not in the present safety assessment because these protective coatings were recently installed and are presumably performing well. A green top coat has been applied to members that received a new coating system, allowing these members to be readily distinguished from members that still have the original brown or white protective coating system in place. The first of the replacement coatings were installed in 2009, and are nearing 10 years of service life at the time that this report is written.

There is an ongoing concern that the original protective coatings may have completely failed in some locations, thereby exposing the underlying structural members to the possibility of renewed corrosion. Consequently, those portions of members where we believe that the original protective coatings have failed are selected for assessment whether further corrosion damage has occurred, in addition to the corrosion damage that occurred prior to application of the original coatings in the 1980s and 1990s.

The base truss systems beneath the four sideline seating stand structural modules represent one-third to one-half of the total number of weathering steel members in the entire stadium. Additionally, these base truss members support more than one-half of the total number of seats in the stadium. Given that the original coatings on these base truss members have not yet been replaced, and that these are the oldest of the original protective coatings applied, these members were selected for assessment under the present safety inspection and evaluation efforts.

Other structural members where the original protective coating system has not yet been replaced and were therefore selected for assessment in this project consisted of the mainframe welded plate girders that comprise the raker frames which support the Blue, Brown, Red and Yellow seating areas, and the framing members that connect the raker frames to the diagonal bracing frames at the rear of the stadium.

Lightweight Metal Decking Floor Slabs

A visual survey of the underside of the original lightweight decking systems that are older than 5-years are selected for assessment in this project. General locations in the stadium where the lightweight decking systems remain in place were summarized earlier in this report.

Areas in the stadium where the lightweight decking system have been replaced by a conventional composite metal decking system during the H&S3 project are not expected to exhibit deterioration at this time, and as a result, spans of conventional composite metal decking are not included in the present assessment.

Other Structural Features

Portal structures constructed from structural steel and sheet metal of uncertain date of construction exist at the vehicular entry gates that lead into the Aloha Stadium site. The vehicular entry gate structures have not been surveyed for corrosion in any recent survey or repair efforts. Therefore, the vehicular entry gate portal structures are selected for assessment.

Similarly, canopy structures constructed from structural steel and sheet metal of uncertain date of construction exist at several of the pedestrian entry gates that lead into the main concourse at the rear of the Aloha Stadium. The pedestrian entry gate structures have not been surveyed for corrosion in any recent survey or repair efforts. Therefore, those pedestrian entry canopy structures that are constructed of structural steel and sheet metal are selected for assessment. Some pedestrian entry canopy structures are constructed of reinforced concrete; the concrete canopy structures are not included in the present assessment.

Because the current spiral ramp structures are replacement structures constructed in the 1990s using galvanized mild steel, maintenance of corrosion protection for the ramp structures is a lower priority. As a result, the spiral ramp structures are not included in the present assessment.

The lower portions of both endzone seating stands (the lower concourse floor slab, the Orange seating areas, and the structures supporting these areas) are constructed of reinforced concrete structural systems. As a result, these lower portions of the North and South Endzone seating stands are not included in the present assessment.

Survey Methodology

The primary methodology used was visual assessment of the selected weathering steel members and lightweight floor decking as summarized above. Due to access limitations and obstructions, it was not possible to observe all surfaces of every structural steel member with original coatings from the 1980s and 1990s, or every panel of lightweight floor decking. It is estimated that less than 20 percent, cumulatively, of the surfaces of the structural steel members with original coatings that were assessed in this survey were concealed or inaccessible. For the lightweight decking, it is estimated that less than 10 percent of the lightweight decking panels were concealed or inaccessible.
The visual survey assigned a condition state to each member and decking panel, as follows:

- **Condition State 1 (CS1)** – No discernable coating failure on steel members (Figure 8) or the visible surfaces of the sub-decking hat channels or the decking itself; therefore, no corrosion is assumed. These members and decking panels pose no known immediate concern for health and safety of occupants of the structure.

- **Condition State 2 (CS2)** – Visual signs of localized coating failure with only minor surface corrosion on steel members (Figure 9) or paint loss with corrosion observed or corrosion likely on the visible surfaces of the sub-decking hat channels or the decking itself. Section loss is assumed to not be appreciable. Health and safety implications of CS2 members include the eventual progression of observed deterioration into Condition State 3, and the potential for corrosion products and debonded coatings to displace from the surface of the member or the decking, becoming a nuisance and a relatively minor safety concern, to a lesser degree than for members or decking classified as Condition State 3.

- **Condition State 3 (CS3)** – Visual signs of coating failure and noticeable corrosion on steel members (Figure 10) or the visible surfaces of the sub-decking hat channels or the decking itself (Figure 11). There appear to be notable corrosion-related section losses in the steel member or decking. Health and safety implications of CS3 members include corrosion products and debonded coatings that have the potential to displace from the surface of the member or decking, becoming a nuisance and a relatively minor safety concern.

- **Condition State 4 (CS4)** – Visual signs of coating failure on the steel member (Figure 12, Figure 13), sub-decking or decking (Figure 14), accompanied by pronounced corrosion of the member, sub-decking or decking itself. Corrosion-related section loss in the member, sub-decking, or decking is not only visibly apparent, but appears to be so pronounced that the structural performance of the member, its structural connections, sub-decking or decking, or the bearing supports for the decking, is called into question.
Figure 11. Example of lightweight floor slab decking classified as Condition State 3.

Figure 12. Example of structural steel member classified as Condition State 4. The yellow arrow points to a hole completely corroded through the thickness of the web of the steel member.

Figure 13. Additional example of structural steel member classified as Condition State 4.

Figure 14. Example of lightweight floor slab decking classified as Condition State 4.
SURVEY RESULTS AND DISCUSSION

The field work for the visual assessment of corrosion took place primarily during July and August 2018. Detailed findings are given in a series of appendices, as follows:

Appendix A – Representative photographs of selected steel members and decking panels classified as CS3 or CS4, including narrative regarding assessment of apparent causes of observed corrosion, along with additional descriptive notes

Appendix B – Memos summarizing detailed findings for supplementation assessments of selected groups of members and ancillary structures (distributed electronically in report Volume 2 of 2)

Appendix C – Orientation drawings showing the locations within the stadium of steel members and lightweight decking panels classified as CS3 and CS4 (distributed electronically in report Volume 2 of 2)

Appendix D – Results of the member-by-member survey for the entire stadium (distributed electronically in report Volume 2 of 2)

Appendix A is organized into groups of members, based on the corrosion observed in similar types of members, as follows:

Group 01 - Raker Cantilever Assemblies on End Frames: Flange Corrosion
Group 02 - Endzone Exterior Diagonal Braces on Line F 9: Corrosion of Brace at Concrete Barrier
Group 03 - Plate Girders on Line F at Top of Blue Seating Section: Corrosion and Cracked Welds at Connections to Raker Frames
Group 04 - Lower Chord Horizontal Truss at Field Level: Corrosion at Connection of Acutely-Skewed Horizontal Truss Diagonal Brace to Bottom Chord of Radial Truss at End Frames
Group 05 - Fiberglass Angles: Overhead Falling Hazard and Corrosion at Attachment to Raker Frame Members above Concourses
Group 06 - Lightweight, Thin-System Floor Decking: Corrosion of Metal Deck
Group 07 - Orange Cross Aisle End Frame Beams: Corrosion at Beam Top Flange Supporting Deck Edges
Group 08 - Lower Concourse End Frame Beams: Corrosion at Beam Top Flange Supporting Deck Edges
Group 09 - Seat Plate Tread-and-Riser Rows: Corrosion at Seat Plates
Group 10 - Escalator Framing: Corrosion of Girders at Lower Concourse and of Beams at Field Level Landing
Group 11 - Radial Truss Framing Members: Corrosion at End Frame Radial Trusses
Group 12 - Upper and Lower Concourse Levels, Outer Perimeter Edge Beams: Corrosion at Beams
Group 13 - Red Seats Field-Fronting Beam: Flange Corrosion at Seat Plate Edges
Group 14 - Field -Fronting Framing Members along Grid Line A: Corrosion at Seat Plate Opening for Utilities
Group 15 - Sideline Stands Siding Girr Connections at End Frame Walls: Missing Bolts at Connections
Group 16 - Press Box Floor Framing Member Connection: Corrosion at Connection
Group 17 - Radial Trusses Supporting Orange Seats: Isolated corrosion at connections
Group 18 - Raker Frame at Box Seats Level: Corrosion at Raker Plate Welded Connections

As part of these assessments, each structural steel member and lightweight decking floor panel in the stadium is given a unique member identifier (Member ID). The member identification scheme is described in detail on Pages C-1 and C-2 of Appendix C.

Findings and discussion for various groupings of structural steel members, including the lightweight decking system, follow.

General Findings

The findings from our 2018 survey indicate that approximately 200 weathering steel members and approximately 85 panels of lightweight decking are presently observed to exhibit severe corrosion (cumulative of members and decking panels classified as CS3 and CS4). Our visual assessment found that essentially all of the original protective coatings, typically having a brown-colored top coat, at the observed weathering steel members have deteriorated. Corrosion to varying degrees has resumed at almost every weathering steel member having original coatings that we observed. The degree of resumed corrosion was observed to be highly variable, ranging from mild to severe. Severe corrosion (CS 3 and CS 4) is taken to be readily-observed, unabated corrosion on the weathering steel member that has resulted in pitting of the steel surface, pronounced corrosion scale accumulation (exfoliation), or both, either of which may represent a sufficient loss of steel that causes a reduction in the structural capacity the member or connection.

With respect to the lightweight floor decking, our 2018 visual assessment is the first time that the lightweight floor decking has been included in a comprehensive manner in any of the recent interim assessments for corrosion. Based on observations made of the underside of the lightweight floor decking, large extents of the lightweight decking do not exhibit severe corrosion. Nonetheless, severe corrosion (CS 3 and CS 4) was observed in the lightweight decking at isolated locations throughout the stadium. As described later in this report, the severe corrosion typically consists of section losses in the sub-decking hat channels, which can lead to a reduction in the structural capacity of the decking system in the area where the severe corrosion occurs.

Expected levels of work to address the steel members and decking panels classified as CS3 and CS4 are described later in this report.

Descriptions of particularly prominent or particularly extensive deterioration on members and decking panels classified as CS3 and CS4 follow below. Member group identifiers are as summarized above, and are the same as the member grouping scheme utilized in Appendix A. Additional information on member groups not described below can be found in Appendix A.

Beam Flanges in Raker Cantilever Assemblies (Group 01)

At each radial grid line throughout the stadium, there are cantilevered raker frame assemblies that structurally support the Red and Brown seating areas (Figure 15). The primary components of the raker assembly include a deep, structural steel, welded raker beam that directly supports the seat plates and cross aisle of the Red seating area (upper cantilevered beam), a more shallow, structural steel, welded raker beam that directly supports the seat plates and cross aisle of the Brown (loge) seating area (lower cantilevered beam), and a weathering steel wide flange member that appears to be a "column" but instead serves as a tension tie to transfer structural loads from the structural framing at the Brown seating level up to the structural framing at the Red seating level.
At several end raker frame locations, severe corrosion losses (CS3 and CS4) have been visually observed in the top flange of the deep raker beam supporting the Red seating level (Figure 16). Severe corrosion losses have also been observed in the top flange of the raker beam supporting the Brown seating level. There are a total of twelve end raker frames at the stadium, resulting in a total of twenty-four weather steel raker beams that potentially exhibit notable corrosion losses. There are similar cantilevered assemblies at the interior raker frames, but the beams of the interior cantilever assemblies do not exhibit corrosion to the same extent as do the beams on the end frame cantilever assemblies.

It appears that, over the years, rainwater has entered into operable access hatches in the floor deck at the ends of the cross aisles servicing the Red and Brown seating areas. The access hatches are located immediately above the subject raker beams in the end raker frames. The rainwater appears to have leaked directly onto the top flanges of the raker beams, resulting in notable corrosion to the top flanges of the raker beams due to relatively persistent wetness.

Because the structural configuration of the raker assemblies is cantilevered in nature, these assemblies in general lack structural redundancy, which in turn means that the probable consequences of structural failure of an assembly will likely be more severe than that of a structural member with redundancy. Consequently, the top flanges of the upper and lower cantilevered beams in these assemblies at several end-bay locations in the stadium were assessed in the field through physical measurements that estimated the extent of member cross-section lost in the top flanges due to corrosion. The field-measured section losses were used to estimate the remaining structural capacity of the as-corroded members. Structural demands, determined using current building code requirements, were then calculated for these members and subsequently compared to remaining structural capacities; the results of such comparisons are typically expressed numerically in terms of demand-to-capacity ratios.

Based on our field measurements and subsequent structural analyses, we find that the current structural capacities of the as-corroded cantilevered raker assemblies are such that demand-to-capacity ratios are less than 1.0, which means that even after accounting for the adverse structural effects of corrosion-related section losses, enough structural capacity remains such that the existing, as-corroded structural section satisfies the structural strength requirements of the building code. In any event, the affected structural members in the cantilevered assembly will almost certainly continue to corrode, and if repairs are not implemented in a timely manner to mitigate the effects of continued corrosion and to restore structural capacities, the remaining structural capacities of the corroding members will likely reduce with time to structural capacities below those required by the building code. As summarized later in this report, it is recommended that the affected portions of the cantilevered raker assemblies be structurally repaired within a 24-month time period. Further details regarding our assessment of the affected cantilever raker assemblies is given in a memo included in Appendix B of this report.
Endzone Diagonal Braces at Concrete Barriers (Group 02)

A diamond-configuration, diagonal bracing frame exists at the rear of each of the two endzone seating stands. The structural members of the diagonal bracing frames are weathering-steel wide-flange structural shapes. At the main concourse level, concrete barriers are present where the lowest level of diagonal structural steel braces connects to the reinforced concrete substructure of the endzone seating stands (Figure 17). Although these concrete barriers are referred to as “thrust blocks” on the original architectural drawings, a review of the original structural drawings indicates that the barriers are lightly-reinforced, and as a result, the concrete barriers do not appear to serve a structural function. Instead, it is presumed that the concrete barriers are present as a measure to prevent vehicles from impacting the diagonal braces. The original, circa 1990s protective coatings on these particular weather steel braces have been removed and renewal protective coatings (green paint topcoat) have been applied within the past 10 years. While green-painted members are generally excluded from the approved scope of the present corrosion assessment, the corrosion-related losses were readily-noticed at some of these members, and as a result, green-painted members of this particular type were included in the present assessment.

During our August 2018 corrosion survey field activities, along with follow-up visual observation of these braces during September and November 2018, WJE observed severe corrosion losses (CS3 and CS4) in almost every brace, at the bottom end connections in the vicinity of the concrete barrier, where the structural steel brace connects to the reinforced concrete substructure of the seating stand. A representative location classified as CS4 is shown in Figure 18; a total of four braces were categorized as CS4. The locations on the braces where noted corrosion losses occurred are locations where, due to physical interference with the concrete barriers, it is difficult to apply protective coatings to the weathering steel brace member; these locations also are configured in a manner that tends to retain water and debris. As a result, despite having been re-coated within the past 10 years, corrosion of the weathering steel member is apparently on-going at a relatively accelerated rate at these locations because the protective coatings are locally failing.

Because of the severity of the observed corrosion losses (CS3 and CS4), which included complete loss of section through the entire thickness of the web or the flange of some of the brace members, six brace members in the endzone seating sections of the stadium were selected for further assessment in the field through physical measurements that estimated the extent of member cross-section lost due to corrosion. The field-measured section losses were used to estimate the remaining structural capacity of the as-corroded brace members, specifically at the location where the brace member penetrates into the concrete barrier. Structural demands, determined using current building code requirements, were then calculated for these members and subsequently compared to remaining structural capacities; the results of such comparisons are typically expressed numerically in terms of demand-to-capacity ratios.

Based on our field measurements and subsequent structural analyses, we find that the current structural capacities of the as-corroded brace members are such that demand-to-capacity ratios are only slightly below 1.0. This means that the remaining structural capacity of the as-corroded brace member only marginally satisfies the structural strength requirements of the current building code.

Figure 17. Representative concrete barrier at base of structural steel braces that make up the diagonal bracing frame at the rear of the endzone seating stands (South endzone shown). The red arrow indicates viewing position for the photo of Figure 18.

Figure 18. Annotated photo showing severe corrosion conditions at base connection of steel brace member to the concrete barrier (South endzone).
In any event, the affected braces in the endzone seating stands will almost certainly continue to corrode, and if repairs are not implemented to mitigate the effects of corrosion and to restore structural capacities, the remaining structural capacities of the corroding endzone brace members will almost certainly be reduced to less than the structural capacities required by the building code. As summarized later in this report, it is recommended that the affected endzone braces be structurally repaired commencing immediately.

Because we have assessed only six out of a total of 40 brace-to-concrete barrier interfaces in both endzones, later in this report we recommend that all remaining endzone braces be examined up-close and subsequently assessed for the effects of corrosion losses, and that the concrete barrier in at least one location be at least partially dismantled to allow for examination of that portion of the structural steel brace that is embedded within the concrete barrier. These supplemental assessments are recommended to commence immediately. Further details regarding our assessment of the endzone braces is given in a memo included in Appendix B of this report.

**Blue Seating Section, Line F Girder-to-Raker Connections (Group 03)**

The concern with these particular connections was previously identified during the 2016 survey. Although these connections are anticipated for repair as part of the pending H&S5 project, at the time of this writing, the contract has not been awarded and so the connections have not yet been repaired. As a result, we continue to identify these connections as conditions to be addressed in a health and safety project.

Connections at the top of the blue sections are present at each numbered gridline. A structural steel angle connects the top flanges of two abutting girder ends to the vertically-oriented flange of the adjacent raker column (Figure 19).

Water becomes entrapped between the vertical leg of the angle and flange of the raker column. The entrapped moisture is causing corrosion on the connection angle and the flange of the raker column. The expansion of the corrosion products between the connection angle and the flange of the raker column applies a prying force to the connecting pieces that has resulted in partial or complete failure of the weld between the connection angle and the raker column flange at many of these connections (Figure 20 and Figure 21). Continued corrosion at these connections will result in further cracking of the affected welds. At the time of our survey, the welds have failed to various degrees at approximately 75 percent of these angle connections.
Lightweight, Thin-System Floor Decking (Group 06)

Lightweight decking is included in the 2018 survey; the lightweight decking floor slabs have not otherwise been systematically included in any of the recent assessments for corrosion. Visual surveys were conducted from beneath for the lower (main) concourses of the sideline seating stands, for the upper concourse of all seating stands, and for cross aisles comprised of lightweight decking in all seating stands.

Severe corrosion was typically observed at locations where entry of water into the decking system is unmitigated, such as along the end bay radial trusses at the lower concourses of the sideline seating stands (Figure 22). Other locations where severe corrosion of the lightweight decking was observed also typically involved water leaks, such as at plumbing penetrations associated with toilet facilities (Figure 23). Unmitigated rainwater leaks through the sidewalls of the vomitory ramps of the main concourses in the sideline seating stands have been previously identified as affecting the lightweight decking floor slabs of the electrical rooms (Figure 24). These unmitigated rainwater leaks have also affected the lightweight decking of the vomitory ramps themselves and the lightweight decking at “back of the house” facilities such as maintenance rooms and concession storage areas.

As mentioned above, the severe corrosion in the lightweight decking at vomitory ramps and the electrical rooms had been previously identified as locations where the bearing of the floor span was determined to be unreliable at these locations. Installation of the supplemental support beams to stabilize these conditions at the electrical room is included in the H&S4 project; the other noted locations are anticipated to be addressed by the H&S5 project that is presently pending award. Provision for improved water control at the apparent leak source are also included in the H&S4 and H&S5 projects.
Seating Plates

The seating plates throughout the stadium were visually surveyed on various dates during the period between April 2015 through September 2016, and again in late 2017 and early 2018, for severely corroded conditions as part of the design phase of the H&S4 and H&S5 projects, respectively. Results of these health and safety design-phase investigations are summarized in Table 3.

Ancillary Entry Gate Overhead Structures

Limited visual assessments of the overhead structures at vehicular and pedestrian entry gates, which may be commonly described as roof canopies, have not been included in any recent assessment for corrosion at the Aloha Stadium. Given the limited size of the typical overhead structure at an entry gate of either type, a condition state was holistically assigned to an entire overhead structure, as opposed to assigning a series of condition states to individual structural members within an overhead structure. Our assessment included two vehicular entry gate overhead structures and six pedestrian entry gate overhead structures. The structural steel framing members for the vehicular entry gate overhead structures were categorized as CS2, except that the sheet metal cladding and roofing panels were classified as CS3. The six pedestrian entry gate overhead structures were categorized as CS4. The corrosion damage at pedestrian entry Gate 1 was found to be so severe that it is recommended to immediately repair or immediately dismantle the structure at this particular entry gate. Further details regarding our assessment of both types of entry gate overhead structures are given in two separate memos included in Appendix B of this report.

Rate of Corrosion

The rate of corrosion of weathering steel exposed to a high-chloride environment such as Hawaii can be approximated as an exponential relationship that increases with time. However, the rate of corrosion is also dependent on factors that are not readily quantifiable for the conditions encountered at Aloha Stadium. Therefore, it is not feasible to forecast the rate at which structural weathering steel members with deteriorating original coatings applied in the 1980s and 1990s will corrode at the Aloha Stadium.

Nonetheless, the findings from our 2018 survey when compared to those of the 2016 survey, provide meaningful, quantitative information regarding the actual progression of corrosion at the Aloha Stadium.
The locations where structural steel members have been categorized as CS3 and CS4 are graphically summarized in Figure 25 for the 2016 survey, and in Figure 26 for the 2018 survey; these figures also include locations where metal decking panels and seating plate rows are categorized as either CS3 or CS4, but do not include locations where fiberglass angles were identified as potential falling hazards.

The findings of the 2018 survey indicate that approximately 200 weathering steel members are presently categorized as either CS3 or CS4, which means that these members exhibit severe corrosion. In our 2016 survey, approximately 50 weathering steel members were categorized as either CS3 or CS4. Over the course of approximately two years, the cumulative number of steel framing members categorized as either CS3 or CS4 has increased by 300 percent. This is quantifiable evidence that the adverse effects of corrosion at the Aloha Stadium are increasing with time.

The findings of the 2018 survey indicate that approximately 85 panels of the lightweight floor slab decking are presently observed to exhibit severe corrosion (CS3 and CS4). Although lightweight decking was not surveyed in 2016, based on anecdotal reports from stadium staff, the number of maintenance-related concerns involving lightweight decking has generally increased with time in recent years. This is anecdotal evidence that the adverse effects of corrosion at the Aloha Stadium are increasing with time.

Figure 25. Graphical depiction of locations of recommended repairs: 2016 corrosion assessment
SUMMARY AND RECOMMENDATIONS

The results of the corrosion assessment lead to the following recommendations.

Expected Levels of Work

Based on the observed condition state, expected levels of work to address identified concerns are as follows:

- **Condition State 1 (CS1)** – Remediation of concerns with steel members classified as CS1 involves an application of maintenance overcoats onto the topcoats of the corrosion mitigation coatings within the window of maintenance overcoating feasibility, estimated to be 10-15 years from the application of the corrosion mitigation coatings that are in place. The undersides of the lightweight decking system panels that are classified as CS1 should be recoated with corrosion mitigation coatings and the pedestrian traffic coatings on the concrete walking surface should be replaced, along with repairs to the concrete substrate; however, in lieu of maintenance-type repairs, it may be more cost-effective over the long term to replace the lightweight decking system with a thicker, conventional composite metal decking system.

- **Condition State 2 (CS2)** – Remediation of concerns with steel members classified as CS2 involves entire removal of existing protective coating systems and installation of new corrosion mitigation protective coating systems. Areas of lightweight decking system classified as CS2 should be replaced with a thicker, conventional composite metal decking system.

- **Condition State 3 (CS3)** – Remediation of concerns with steel members classified as CS3 involves complete removal of existing protective coating systems and installation of new corrosion mitigation protective coating systems. High priority CS3 steel members have active corrosion concerns that should be considered for mitigation in the near-term, but not necessarily needing intervention in the next 24 months. Similarly, high-priority areas of metal decking classified as CS3 should be replaced with a thicker, conventional composite metal decking system in the near-term, but not necessarily needing intervention in the next 24 months.

- **Condition State 4 (CS4)** – Remediation of concerns with steel members classified as CS4 requires structural modifications to strengthen affected components of the member or to eliminate construction details that inadvertently result in accelerated corrosion. CS4 steel members identified as “Immediate” priority have concerns over structural performance that should be addressed immediately; and CS4 steel members identified as “24 month” priority have concerns over structural performance that should be addressed within 24 months. High-priority areas of metal decking classified as CS4 should be replaced with a thicker, conventional composite metal decking system within the next 24 months.

Identified Concerns Requiring Repair

We recommend that the concerns identified as CS3 and CS4 in Table 1 of the Executive Summary section of this report be repaired. Concerns identified in Table 2 of the Executive Summary section that are anticipated for completion within H&S5 or are still pending continue to be recommended for repair. Both tables also list priority for repairs. Please refer to group summaries in Appendix A for additional details regarding the specific concerns listed in the tables.

Structural members and connections that have been rated CS4 are recommended to be structurally repaired within the next 24 months relative to the inspection date of August 2018, as summarized in Table 1 and Table 2. The members and connections identified as CS3 should be given priority for repair after completion of the CS4 repairs. Depending upon the extent of cumulative corrosion damage, there is the possibility that the corrosion damage may have reduced the load capacity of a structural member or its
structural connections. Repair designs for CS4 and CS3 members should evaluate corrosion losses in detail, and should include structural strengthening if the member is overstressed.

Members identified as CS2 are not considered structurally problematic at present time. However, it is financially prudent to perform maintenance on these members with available funding before the corrosion progresses to a CS3, which may involve more extensive repairs or reconstruction in addition to installation of corrosion mitigation protective coating systems.

**Supplemental Corrosion Assessments in the Near-Term**

A number of locations where members have been identified as CS4 during the 2018 survey warrant detailed, up-close physical inspection to provide for an appropriate final assessment and determination of repairs. In addition to up-close visual observations, measurement of section loss may also be warranted for weathering steel structural members. Recommended supplemental assessments are as follows:

- **Systematic, up-close examination for and measurement of corrosion losses of the endzone diagonal braces at the concrete barriers (Group 02 members in Appendix A), for all remaining endzone braces not assessed in the present study.**
- **Exploratory investigation into the concrete of at least one barrier at south endzone is also recommended.** It would however be preferable to investigate into the concrete of more than one barrier, and to also include concrete barriers in the north endzone.
- **Up-close investigation and corrosion loss measurements of the skewed connections in between the horizontal trusses at field level and the bottom chords of the radial truss end frames at Grid Line F.9 (Group 04 members in Appendix A).**
- **Detailed investigation of the lightweight floor decking panels at bathroom plumbing penetrations and chases (a selected portion of Group 06 members in Appendix A).**
- **Detailed investigation of the decking at end raker frames where curved pedestrian passage bridges connect to lower and upper concourses (a selected portion of Group 08 members in Appendix A).**

It is recommended that these additional assessments be completed within 12 months, relative to our inspection date of August 2018, with the exception of the recommended assessment regarding Group 01 and Group 02 members, for which the additional investigations are recommended to commence immediately.

**Recurring Structural Inspections**

The unpredictability of future corrosion-related structural damage leads to the recommendation that recurring structural inspections take place so that active corrosion can be identified before the extent of corrosion-related damage reduces calculated structural capacity of a member or a connection to a level below structural acceptability. Furthermore, given the undetermined timeline related to possible construction of a new stadium, and thus also an undetermined timeframe for keeping the Aloha Stadium in service to the public, it is also appropriate to identify future necessary structural safety improvements by a program that includes recurring structural inspections.

Given the 300 percent increase over the past two years in the number of members classified as severely corroded (members classified as either CS3 or CS4), a one-year interval between inspections is recommended. This is one-half of the usual interval between inspections for highway bridges (23 CFR 650.311); this reduction is warranted due to the use of weathering steel for primary structural framing members and by the 300 percent increase in the number of severely corroded members observed in 2018 as compared to 2016. Therefore, the next recurring inspection of the Aloha Stadium is recommended to be completed no later than August 2019, unless conditions come to light that warrant a shorter interval between inspections.

**Aging of Renewed Protective Coating Systems**

As summarized earlier in this report, the State of Hawaii began a phased program for renewal of the circa 1980s and 1990s protective coatings system. Renewal protective coatings have been installed over a series of construction projects, commencing with construction projects that were completed in 2009, and continuing to the present, because significant portions of the stadium have yet to receive renewed protective coatings.

Commonly-accepted practice within the coatings industry includes periodic visual assessment of protective coatings systems, prior to the end of their anticipated service life. Based on the anticipated service life of the fluoropolymer top coat material of the renewal coating system, which is 15 years, it is recommended that periodic visual assessments of the renewal coating system commence at 10 years of in-service life of the renewal coating system. It is recommended that the visual inspections commence prior to achievement of the anticipated service life of the topcoat so that coating system performance concerns can be detected in advance of the lapsing of the warranties for the coating system work.

At the time that the recommended 2019 inspections are anticipated to be performed, renewal protective coating systems that were installed under construction contracts where work was completed in 2009 through 2011 will have been in service for an average of 10 years. It is therefore recommended that weathering steel members which received renewed protective coatings under the following construction contracts be included in the 2019 inspections:

- **Phase 1 [Aloha Stadium, Replace Metal Roof Deck And Transformers (Sections FF to KK and RR to VV) DAGS Job No: 12-10-0518] - Completed 2009**
- **Phase 2 [Aloha Stadium, Replace Metal Roof Deck And Transformers (Sections LL TO QQ, R & S, & L TO Q) DAGS Job No: 12-10-0598] - Completed 2010**
- **Phase 3 [Aloha Stadium, Replace Metal Roof Deck And Transformers (Sections AA TO EE, & A TO K) DAGS Job No: 12-10-0620] - Completed 2011**

**Continued Operations**

Due to their criticality to continued structurally-safe operations of the existing stadium, particular members classified as CS4 are identified to be repaired immediately. If these repairs cannot commence immediately, the members identified for immediate repair should be monitored for on-going deterioration during the delay period; the delay period should not exceed 1 year. The intent of the monitoring would be to generally assess that the stadium can be occupied for continued operations during the delay period. The nature of the monitoring program, and the frequency of monitoring, remain to be developed.

Presuming that repairs to the members classified herein as CS4 are completed within two years from the date of our most recent inspections (August 2018), the stadium can be occupied for continued operations. Projections of suitability for continued service cannot be reliably made beyond a one-year interval due to rates of corrosion that cannot be determined, as evidenced by the 300 percent increase over the past two years in the number of members classified as severely corroded. Suitability for continued operations beyond August 2019 will be determined on the basis of the next recurring inspection, which is recommended to be completed no later than August 2019.
It can be anticipated that previously-unidentified repair design and construction projects may arise from the findings of future annual recurring inspections; therefore, contingency budgets for necessary structural maintenance at the Aloha Stadium should be established, even in the event that a firm decision is made by the State to replace the Aloha Stadium with a new stadium. Structural maintenance remains necessary even after such a decision has been made so that the Aloha Stadium remains structurally safe while it is open to the public during the multi-year period that a new stadium is funded, designed and constructed.

APPENDIXES

A. Summaries of Members Rated Condition States 3 and 4
B. WJE Assessment Memos (distributed electronically in report Volume 2)
   - Memo Regarding Pedestrian Entry Gates
   - Memo Regarding Vehicular Entry Gates
   - Memo Regarding Cantilever Raker Assemblies
   - Memo Regarding Endzone Diagonal Braces
C. Orientation Plan and Elevation Drawings Noting Locations of Members Rated Condition States 3 and 4 (distributed electronically in report Volume 2)
D. Tabulation of Corrosion Survey Data (distributed electronically in report Volume 2)
APPENDIX A
SUMMARIES OF MEMBERS CLASSIFIED AS CONDITION STATE 3 OR 4

Group 01 - Raker Cantilever Assemblies on End Frames, Flange Corrosion

|--------------------------------|-----------------------------------------------|

**CS4 Piece Count:** 7
- Member(s): A015, B024, B149, D012, D015, E152, F024

**CS3 Piece Count:** 18
- Member(s): A009, A232, A39, B021, B152, C021, C124, C149, C152, D009, D232, D238, E02, E021, E024, E149, F021, F149, F152

**Stand Module(s):** All

**Nearest Plan Grid Intersection(s):** 6, 7, 12, 13, 18, 19, 29, 30, 35, 36, 41, 42 & E

**Nearest Seating Section(s):** E, F, K, L, O, R, R, Q, O, D, O, D, L, K, K, F

**Approximate Vertical Position(s):** Loge and Red Seats

**Representative Photo(s):**

- Photograph of raker cantilever assembly with corrosion

**Apparent Corrosion Accelerator:**
- Poor detailing at the edges of the cross aisle decks supported by the cantilever raker assemblies has allowed water to become entrapped on the top surface of the top flanges of the assemblies’ beam members, leading to corrosion.
- At one grid line, corrosion likely due to standing water has been observed at the base of the tension flange ("column") that is used to suspend the Loge seating level from the Red seating level above.

**Other Notes:**
- Corrosion in the tension region of the top flanges of the raker beams in these cantilever assemblies is of particular concern. The significance of this specific condition has been evaluated by field measurement and an analytical evaluation. Findings are be presented in more detail in a memo provided in Appendix B.
### Group 01 - Endzone Exterior Nodal Braces on Lite F:
Corrosion at Connections to Concrete Substructure at Concrete Barrier

<table>
<thead>
<tr>
<th>Reference, Appendix C Page No(s):</th>
<th>19, 20, 73, 74</th>
</tr>
</thead>
</table>

**CS4 Piece Count:** 4  
**Member(s):** A035, D021, D022, D023  
**CS3 Piece Count:** 36  
**Member(s):** A099, A090, A091, A092, A093, A094, A095, A096, A097, A098, A099, A100, A101, A102, A103, A104, A105, A106, A107, A108, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038

**Representative Photo(s):**

- [Image of representative photo(s)](image_url)

- **North and South Endzones:**
  - Nearest Plan Grid Intersection(s): 16, 19, 29 and 42-46 at F.0
  - Nearest Seating Section(s): F-E, A-H, E-V, R-V, R-V-V

- **Approximate Vertical Position(s):** Lower (Main) Concourse

- **Apparent Corrosion Accelerator:**
  - A non-draining pocket where the diagonal brace connects to a cross-lie member and also penetrates into the concrete barrier has retained debris, likely resulting in promotion of corrosion due to prolonged wetness.

- **Other Notes:**
  - Corrosion has progressed in diagonal brace member webs and flanges to a perforated condition, resulting in loss of load-bearing capacity.

The significance of this specific condition has been evaluated by field measurement and an analytical evaluation. Findings are presented in more detail in a memo provided in Appendix B. It is also recommended that all remaining, similar locations be inspected in greater detail for similar conditions, and further repairs implemented as necessary.

### Group 03 - Plate Wrinkles on Lite F at Top of Blue Sealing Frames at Connections to Raker Frames

<table>
<thead>
<tr>
<th>Reference, Appendix C Page No(s):</th>
<th>3-13, 23-26, 40-45, 57-67, 77-82, 94-99</th>
</tr>
</thead>
</table>

**CS4 Piece Count:** 30  
**Member(s):** A099, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038

**CS3 Piece Count:** 11  
**Member(s):** A035, A036, A037, A038, A039, A040, A041, A042, A043, A044, A045

**Representative Photo(s):**

- [Image of representative photo(s)](image_url)

- **Stand Module(s):** 46  
  - Nearest Plan Grid Intersection(s): various  
  - Nearest Seating Section(s): various  
  - Approximate Vertical Position(s): Blue Sealing Level

- **Apparent Corrosion Accelerator:**
  - A crevice at a laying surface within a connection entraps water, resulting in corrosion. The expansive corrosion has caused weld fractures at the connections at many locations.

- **Other Notes:**
  - The structural design intent of the angle connection is unknown but these angles appear to stabilize the members involved. Therefore, these connections are recommended to be repaired. The locations of these connections are sometimes concurrent with locations previously identified for recommended voluntary structural upgrade. Designs to mitigate this condition should consider compatibility or implementation of the precisely identified strengthening concept.

Repair to all locations is anticipated to occur in the H&S5 project.
**Group 04 - Lower Chord Horizontal Truss at Field Level:**  
Corrosion at Connection of Acutely Sheared Horizontal Truss  
Diagonal Brace to Bottom Chord of Radial Truss at End Frames  
Reference, Appendix C Page No(s): 26, 46, 83, 100,

<table>
<thead>
<tr>
<th>CS4 Piece Count</th>
<th>Member(s)</th>
<th>CS3 Piece Count</th>
<th>Member(s)</th>
<th>Stand Module(s)</th>
<th>Nearest Plan Grid Intersection(s)</th>
<th>Nearest Seating Section(s)</th>
<th>Approximate Vertical Position(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>B25, B234, C225, C250, E225, E250</td>
<td>4</td>
<td>B250, B230, C234, F234</td>
<td>All Sidelines</td>
<td>7, 12, 13, 18, 30, 36, 41 &amp; G</td>
<td>F, K, L, Q, GG, LL, KK, FF</td>
<td>Field Level</td>
</tr>
</tbody>
</table>

Representative Photo(s):

Apparent Corrosion Accelerator:
Non-draining pocket condition at the connection has retained debris, likely resulting in accelerated corrosion due to prolonged wetness.

Other Notes:
Corrosion has affected radial truss bottom chord member webs to a nearly-perforated condition; additionally, some bolt heads in the connection have been essentially rendered ineffective by the corrosion.

**Group 05 - Fiberglass Angles: Overhead Falling Hazard and Corrosion at Attachment to Raker Frame Members Above Concourses**

<table>
<thead>
<tr>
<th>CS4 Piece Count</th>
<th>CS3 Piece Count</th>
<th>Member(s)</th>
<th>Stand Module(s)</th>
<th>Nearest Plan Grid Intersection(s)</th>
<th>Nearest Seating Section(s)</th>
<th>Approximate Vertical Position(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Many</td>
<td>B138, C10, C038, D063, C088, C133, C138, plus others</td>
<td>NE5L, SE5l</td>
<td>12, 13, 14, 16, 17, 18, F, G</td>
<td>Various</td>
<td>Yellow Seating</td>
</tr>
</tbody>
</table>

Representative Photo(s):

Apparent Corrosion Accelerator:
The fiberglass angles affixed to the steel beam created a water retaining crevice, which leads to localized corrosion of raker member flanges.

Other Notes:
The fiberglass angles have previously been identified as presenting a falling object hazard. Refer to Appendix D of the October 26, 2018 corrosion assessment report for assessment and recommendations related to the fiberglass angles.

The angles have been removed from throughout the NE5L upper concourse, while other angles at locations with relatively advanced corrosion have also been removed at scattered locations elsewhere in the stadium. The falling hazard at locations where the fiberglass angles remain in place are anticipated to be mitigated in NE5S.
Group 06 - Lightweight, Thin-System Floor Decking Corrosion of Metal Deck

<table>
<thead>
<tr>
<th>Member(s)</th>
<th>Nearest Plan Grid Intersection(s)</th>
<th>Nearest Seating Section(s)</th>
<th>Approximate Vertical Position(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS4</td>
<td>44</td>
<td>many</td>
<td>many</td>
</tr>
<tr>
<td>CS3</td>
<td>40</td>
<td>many</td>
<td>many</td>
</tr>
</tbody>
</table>

Representative Photo(s): 

**Apparent Corrosion Accelerator:**
Factors that promote corrosion of the lightweight, thin-system floor decking include: crevices at edge and other support detailing, poor water management, deck traffic coatings in use beyond their effective waterproof service life, poor integration of overlying partition walls, and accumulation of debris within the system components.

**Other Notes:**
The lightweight, thin-decking system is prone to corrosion. Patching and localized repairs are regular maintenance tasks for the stadium management. Prior projects have comprehensively replaced the thin-decking systems in-kind throughout almost the entire stadium. More recent projects have included replacement of the decking with a more robust, composite concrete and metal deck system at the main concourse level in the northeast and northwest sublevels. HBS34 has temporarily stabilized corroded decking systems beneath the electrical rooms at the lower concourse level, and temporary stabilization is anticipated to be installed at some vented ramps under HBS34; however, the decking at the electrical rooms and vented ramps should be completely replaced in future construction.

Group 07 - Orange Cross Axle End Frame Beams, Corrosion at Beam Top Flange Supporting Deck Edges

<table>
<thead>
<tr>
<th>Member(s)</th>
<th>Nearest Plan Grid Intersection(s)</th>
<th>Nearest Seating Section(s)</th>
<th>Approximate Vertical Position(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS4</td>
<td>2</td>
<td>30, 35 &amp; D.7 - D.9</td>
<td>Lower concourse</td>
</tr>
<tr>
<td>CS3</td>
<td>1</td>
<td>1RWHV</td>
<td></td>
</tr>
</tbody>
</table>

Representative Photo(s): 

**Apparent Corrosion Accelerator:**
Poor detailing at the edges of the decks has allowed water to become entrapped on the top surface of the top flanges of the weathering steel members that support the decking where the Orange level cross axle terminates at the rafter frame end bay.

**Other Notes:**
Top flanges of beams supporting the deck assembly are primarily affected, deck replacement projects in the Northeast and Northwest sublevels lower concourses have developed details to mitigate these issues. Repairs for remaining identified locations are anticipated to occur in HBS35.
**Group 09 - Lower Concourse End Frame Beams: Corrosion at Beam Top Flange Supporting Deck Edges**

**CS4 Piece Count:** 4
**Member(s):** FW042, FW241, FW242, FW442

**CS3 Piece Count:** 11
**Member(s):** B341, C304, C642, CW242, E299, E340, E343, E374, EW042, EW242

**Stand Module(s):** NEIL, NWIL, SWIL

**Nearest Plan Grid Intersection(s):** Various

**Approximate Vertical Position(s):** Lower Concourse

**Apparent Corrosion Accelerator:**

Poor detailing at the edges of the decks has allowed water to become entrapped on the top surface of the top flanges of these members, thereby promoting corrosion.

**Other Notes:**

Reference, Appendix C Page No(s): 30, 47, 84, 101

**Representative Photo(s):**
Group 10 - Escalator Framing: Corrosion of Girders at Lower Concourse and of Beams at Field Level Landing

<table>
<thead>
<tr>
<th>CS4 Piece Count:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member(s):</td>
<td>CM112, EW312</td>
</tr>
<tr>
<td>CS3 Piece Count:</td>
<td>2</td>
</tr>
<tr>
<td>Member(s):</td>
<td>CM018, EM018</td>
</tr>
<tr>
<td>Stand Module(s):</td>
<td>SWL3, SESL</td>
</tr>
</tbody>
</table>

Nearest Plan Grid Intersection(s): 13-14, 34-35 & F-G
Nearest Seating Section(s): K, M
Approximate Vertical Position(s): Field Level

Representative Photo(s):

Apparent Corrosion Accelerator:
A poorly detailed interface between the steel plate deck at the escalator landing at field level in the side line seating stands and the framing beam that supports the steel plate deck creates a crevice that entraps water, thereby promoting corrosion. At the lower (main) concourse level, water draining from the surface of the concourse slab enters into the escalator opening, causing corrosion of the girder members that frame the openings.

Other Notes:
Repairs conducted in H&S3 addressed similar detailing in contiguous areas of the field-level escalator landings. Repairs to these additional noted corroded conditions were included in an alternate design for H&S5, which is not anticipated to be awarded. Similarly for the girder at the lower concourse level, repairs to the girder at the concourse level were to be repaired in H&S3, but that portion of the work is no longer anticipated to be included in the scope of construction to be awarded.

Reference, Appendix C Page No(s): 46, 83

Group 11 - Radial Truss Framing Members: Corrosion at End Frame Radial Trusses

<table>
<thead>
<tr>
<th>CS4 Piece Count:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member(s):</td>
<td>CS43</td>
</tr>
<tr>
<td>CS3 Piece Count:</td>
<td>49</td>
</tr>
<tr>
<td>Member(s):</td>
<td>801, 803, 805, 806, 807, 844, 845, 846, 847, 848, 849, 858, 859, 860, 861, 862, 863, 864, 865</td>
</tr>
<tr>
<td>Stand Module(s):</td>
<td>All Sidewalks</td>
</tr>
<tr>
<td>Nearest Plan Grid Intersection(s):</td>
<td>7, 12, 13, 18, 30, 35, 38, 41 &amp; A - G</td>
</tr>
</tbody>
</table>
Nearest Seating Section(s): GG, JL, KK, FF, F, K, L, Q
Approximate Vertical Position(s): Field level

Representative Photo(s):

Apparent Corrosion Accelerator:
At numerous locations within the end bay radial trusses of the sideline seating stands, poor detailing at primary and secondary connections and at wall panel supports create crevices, which entrap water and trash. These undesirable features have promoted corrosion.

Other Notes:
Mitigation of corrosion should be prioritized for the end frame radial trusses to prevent continuing progress of the corrosion to CS4. Strengthening of members and connection details to current wind loading requirements should be considered as part of any corrosion mitigation effort.

Reference, Appendix C Page No(s): 23, 28, 40, 45, 77, 82, 94, 99
**Group 12 - Upper and Lower Concourse Levels, Order Perimeter Edge Beams: Corrosion at Beams**

- Reference: Appendix C Page No(s): 33, 47, 50, 64

**Representative Photo(s):**

![Representative Photo 1](image1)

- C54 Piece Count: 1
- Member(s): C444, C368, C436, C440, C734, E435, E443
- Nearest Grid Intersection(s): NEISL, SEISL, SWISL
- Nearest Seating Section(s): Various
- Approximate Vertical Position(s): Lower and upper concourses

**Apparent Corrosion Accelerator:**

Poor detailing at the edges of the decks has allowed water to become trapped on the top surface of the top flanges of these members, resulting in corrosion. Drainage at the scuppers that service the gutter along the outside edge of the concourses apparently leak and result in persistent wetness on the top flanges of the edge framing members.

**Other Notes:**

Top flanges that support the concourse decking assembly are primarily affected. Deck replacement projects in the Northeast and Northwest aisles have developed details to mitigate these issues.

---

**Group 13 - Red Seats Field-Framing Beam: Flange Corrosion at Seat Plate Edges**

- Reference: Appendix C Page No(s): 87, 104

**Representative Photo(s):**

![Representative Photo 2](image2)

- C54 Piece Count: 0
- C53 Piece Count: 4
- Member(s): E789, F709, F789, F795
- Nearest Grid Intersection(s): SWISL
- Nearest Seating Section(s): H, N, Q
- Approximate Vertical Position(s): Red Seating Level

**Apparent Corrosion Accelerator:**

A poorly detailed interface between the steel plate deck and supporting beam creates a crevice that entraps water, leading to corrosion.

**Other Notes:**

- [Provide additional notes if necessary]
Group 14 - Field-Framing Framing Members along Grid Line A: Corrosion at Seat Plate Opening for Utilities:

| CS4 Piece Count: | 0 |
| CS3 Piece Count: | 4 |
| Member(s): | B159, E159, E161, F159 |
| Nearest Plan Grid Intersection(s): | NE15, SW15L, NW15L |
| Nearest Seating Section(s): | NH, K, N |

Approximate Vertical Position(s):
Field Level

Apparent Corrosion Accelerator:
Poor detailing exists at penetrations that allow utilities to pass from interior to exterior, allowing water ingress and entrainment at crennias created by the penetrations; this has promoted corrosion of the framing members along Grid Line A of the sideline stands.

Other Notes:

Reference, Appendix C Page No(s): 26, 83, 100
Representative Photo(s):

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Group 15 - Sideline Stands Siding Girt Connections at End Frame:

Walls: Missing Bolts at Connections

| CS4 Piece Count: | 0 |
| CS3 Piece Count: | 3 |
| Member(s): | ES421, ES441, FS011 |
| Nearest Plan Grid Intersection(s): | NW15L, SW15L |
| Nearest Seating Section(s): | K, L |

Approximate Vertical Position(s):
Field Level

Apparent Corrosion Accelerator:
Siding girts with questionable connection detailing have been flagged for assessment of structural capacity.

Other Notes:
Historically, the orientation of the siding girts on the sideline seating stands base trim cladding were inverted to a flanges-down configuration to avoid debris entrapment. The rooted connections may have been inappropriately modified during that process.

Reference, Appendix C Page No(s): 82, 94
Representative Photo(s):
### Group 16 - Press Box Floor Framing Member Connection

<table>
<thead>
<tr>
<th>Corrosion at Connection</th>
<th>Reference, Appendix C Page No(s.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS4 Piece Count: 0</td>
<td>06</td>
</tr>
<tr>
<td>CS3 Piece Count: 1</td>
<td></td>
</tr>
<tr>
<td>Member(s): F006</td>
<td></td>
</tr>
<tr>
<td>Nearest Plan Grid Intersection(s): 11, F</td>
<td></td>
</tr>
<tr>
<td>Nearest Seating Section(s):</td>
<td>H</td>
</tr>
<tr>
<td>Approximate Vertical Position(s):</td>
<td></td>
</tr>
</tbody>
</table>

**Apparent Corrosion Accelerator:**
The steel tube floor beam provides support to the floor decking of the football press box. However, a football press box is not shown on the original architectural or structural drawings, indicating that these floor framing members, their connections, and the decking that they support are additions to the stadium, not original construction.

**Other Notes:**
Drainage improvements for E280 are anticipated in HSS.

### Group 17 - Radial Trusses Supporting Orange Seats, Isolated corrosion at connections

<table>
<thead>
<tr>
<th>Corrosion at Connection</th>
<th>Reference, Appendix C Page No(s.)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>CS3 Piece Count: 1</td>
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<tr>
<td>Nearest Plan Grid Intersection(s): SWSL, SDSL</td>
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<tr>
<td>Nearest Seating Section(s): 16 A, 33 C &amp; D</td>
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</tr>
<tr>
<td>Approximate Vertical Position(s):</td>
<td></td>
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</tbody>
</table>

**Apparent Corrosion Accelerator:**
Poor drainage at connections promotes corrosion.

**Other Notes:**
Drainage improvements for E280 are anticipated in HSS.
Group 18 - Baker Frame at Box Seats Level: Corrosion at Baker Plate Welded Connections

<table>
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<th>CEB Piece Count:</th>
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<td>Nearest Seating Section(s):</td>
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<tr>
<td>Approximate Vertical Position(s):</td>
<td>Loge Seating Level</td>
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</table>

Apparent Corrosion Accelerator:
A water-retaining pocket is promoting corrosion.

Other Notes:

Reference, Appendix C Page No(s): 28

Representative Photo(s):
APPENDIX C
ORIENTATION PLAN AND ELEVATION DRAWINGS NOTING LOCATIONS OF MEMBERS CLASSIFIED AS CONDITION STATE 3 OR 4
NOTE: This appendix is distributed electronically in report Volume 2.

APPENDIX D
TABULATION OF CORROSION SURVEY DATA
NOTE: This appendix is distributed electronically in report Volume 2.
NEW ALOHA STADIUM
ENTERTAINMENT DISTRICT

PROGRAMMATIC DRAFT ENVIRONMENTAL IMPACT STATEMENT

WILSON OKAMOTO CORPORATION | CRAWFORD ARCHITECTS